# ALS 230

## User Manual

**AVERY DENNISON**

*...Covering the World*

# Contents

# 1. Important Notes

## 1.1 Overview

The AVERY ALS 230 is a fully automatic labeller. Handling is very easy and can be learned with a minimum of training. For operation, only a few adjustments are necessary. The machine is controlled by a microprocessor and because of its programmable functions, it can be used in many applications.

Except for cleaning the rollers and the label sensor there is no periodical maintenance necessary. This manual should help you to operate the ALS 230. In chapter 2 the machine is described and many expressions are explained. For normal operating chapters 3 and 4 are important. All other chapters give additional details of the machine.

For technical questions, particularly in case of problems, your local service organisation will be pleased to help you.

**Note:** This manual applies to ALS 230s equipped with a *software version* from 5.x onwards.

### 1.1.1 Manufacturer

This machine was built by:

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### 1.1.2 Copyright

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## 1.2 Safety

### 1.2.1 General Safety Notes

In order to avoid any risk of injury due to squeezing between the fixed dispensing edge and the passing product, it may be necessary to add a protection cover in front of the dispensing edge. The necessity for this has to be decided on case by case.

See also regulation EN 292 and 294.

### 1.2.2 Warning Notes in the Text

In this description, two types of notes can be found:
- *Warning note* – indicates a possible risque of injury for the user. Ignoring the warning can lead to injuries or material damages.
  Example:

> ⚠ **CAUTION! - The machine is connected to mains. Only authorised personnel may open the cover. Operation without this cover is not allowed.**

- *Special advice* regarding the carrying out – please notice!
  Example:

> **Note**: Please take note of the given notes and advices. They serve your safety as well as the preservation of value of the machine.

### 1.2.3    Operator's duty of care

The machine was designed and constructed taking into account a hazard analysis and after careful selection of the harmonised standards to be observed, as well as other technical specifications. Thus, it corresponds to the state of the art and allows the highest possible degree of safety during operation.

The safety of the machine, however, can only be put into operating practice if all measures required for the safety are taken. It falls within the operator's duty of care to plan these measures and to verify their implementation.

Above all, the operator must make sure that

- the machine is only used in accordance with its purpose (cf. the section "Use in accordance with the purpose" in the chapter "Specification")
- the machine is only operated in faultless serviceable condition and that especially the safety devices are regularly checked with respect to their serviceability
- the required personal protective clothing and equipment for operating, maintenance and repair personnel are available and are being used
- a legible and complete copy of the operating instructions is always available at the place of operation of the machine
- only personnel which is qualified and authorised for it will operate, service, and repair the machine
- this personnel is instructed in all relevant issues of occupational safety and environmental protection on a regular basis and is familiar with the operating instructions and especially the safety instructions contained therein
- all safety and warning instructions on the machine itself are not removed and are legible

Industrial Safety
Legislation

§§

Safety
Regulations
of the
Trade
Associations

Operator manual

### 1.2.4 Concrete security regulations and symbols used

In the following operating instructions, concrete security regulations are indicated in order to point out the remaining risks which cannot be avoided when operating the machine. These remaining risks include danger to

- Persons
- Product and machine
- Environment

The symbols used in the operating instructions are above all intended to point out the security regulations!

This symbol indicates that especially danger to persons has to be expected.

(Lethal danger, danger of injury)

This symbol indicates that especially danger to the machine, material, and the environment has to be expected.

The most important aim of the security regulations is to avoid injuries to a person.
- Whenever there is a warning triangle with the caption **"Danger"** in front of a security regulation, dangers to the machine, materials, and the environment are not excluded.
- Whenever there is a warning triangle with the caption **"Warning"** in front of a security regulation, a danger to persons, however, must not be expected.
The symbol used in each case, however, cannot replace the text of the security instruction. Thus, it is necessary to always read the text completely!

This symbol does not indicate security regulations, but provides information for a better understanding of the machine's operations.

## 1.2.5    Security measures during normal operation

The machine may only be operated by trained and authorised persons who are familiar with the operating instructions and are able to work in accordance with it!

- Before starting the machine, check and make sure that
- only authorised personnel is staying in the operating area of the machine
- Nobody can get hurt when the machine is started!
- Before every production start-up, the machine must be checked for visible damage and it must be made sure that it is only operated in faultless working condition! Any defects found must be immediately reported to the supervisor!
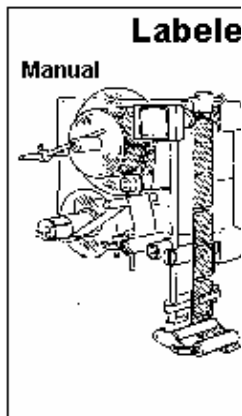
Before every production start-up, all materials/objects that are not necessary for production must be removed from the operating area of the machine!

Before every production start-up, it must be checked and made sure that all safety devices function in a correct manner!

## 1.2.6    Security measures during maintenance and repairs

Inspection and maintenance periods laid down in the operating instructions must be observed!
Observe maintenance and repair instructions in these operating instructions, which refer to individual components!

Before performing maintenance and repair work, the access to the operating area of the machine must be prohibited for unauthorised personnel! Post or put up a sign, which indicates the maintenance, or repair work!

Before performing maintenance and repair work, turn off the main switch for the electric power supply and secure it with a padlock!. The key to this padlock must be in the hands of the person who performs the maintenance or repair work!
When exchanging heavy machine parts, use only suitable and faultless load suspension devices and stopping devices!

### 1.2.7 Work on the electrical equipment

Repair work on the electrical equipment of the machine may only be performed by a trained electrician!
Electrical equipment must be checked on a regular basis!
Loose connections must be fixed again!
Exchange damaged lines/cables immediately!
Always keep the switch cabinet closed! Access is only allowed to authorised personnel with keys/tools!
Never wash down switch cabinets and other housings of electrical equipment with a water hose for cleaning!

### 1.2.8 Work on pneumatic equipment

Maintenance and repair work on pneumatic equipment may only be performed by specially trained personnel!
Before starting maintenance and repair work, depressurise the pneumatic equipment of the machine!
By way of precautionary maintenance, exchange hose pipes on a regular basis, even if there is no damage to be detected!
(Observe the manufacturers' instructions!)
Before setting into operation after maintenance or repair works
- check if loosened screwed connections are tight
- make sure that removed coverings are re-installed
After termination of maintenance and repair work and before re-starting the production, make sure that
- all materials, tools, and other equipment required for maintenance and repair work are removed from the operating area of the plant
- all safety devices of the plant function in a faultless manner!

### 1.2.9 Observe environmental regulations

During any and all work on and with the machine, the statutory duties concerning prevention of waste and the proper waste disposal/recycling regulations must be observed.
Especially in the case of installation, repair and maintenance work, substances which are hazardous for the water, such as detergents containing dissolvents, may not pollute the soil or get into the sewage system!
These substances must be stored, transported, collected, and disposed of in appropriate containers!

# 2. Description

⚠ **CAUTION! - The machine is connected to mains. Only authorised personnel may open the cover. Operation without this cover is not allowed.**

This chapter explains the structure and the function of the labeller. The expressions used are explained here.

## 2.1  Mechanics

The machine is available in a right- or a left-hand version. The expression right or left is related to the direction of product transport. In the following, a right hand machine is explained. For the left-hand version all explanations have to be mirrored. The dispensing mechanics of the machine are shown below.

The label material is unwound from roller (003). The maximum diameter of the label roll is 300 mm. The maximum width is 100 mm. The material roll is guided by two removable plate's (002).

The guide plate in front has to be pressed against the label roll. Behind the cap (004) of unwind mandrel (003) an adjustment screw for the brake is located. The unwind brake avoids after run of the label roll when the label drive stops.

**Note:** For labels longer than 100 mm and in "side labelling applications" it is recommended to use the optional available kit <u>dancer arm controlled unwind brake</u>. This device avoids uncontrolled after run of label material. The brake should not be fixed too tight, otherwise the motor may stall or the material web gets broken.

The dancer arm (011) keeps the material tight and the acceleration forces low. The deviator roller (008) makes sure that the material is guided correctly. The material is guided to the dispensing edge via the deviator roller (009).

The brush (006) keeps the material tight without disturbing the movement. At the dispensing edge (010) the label sensor (007) is mounted. The label sensor detects the gaps between labels. The label sensor comprises of a light source and a light receiver. The sensitivity can be adjusted by the operators panel.
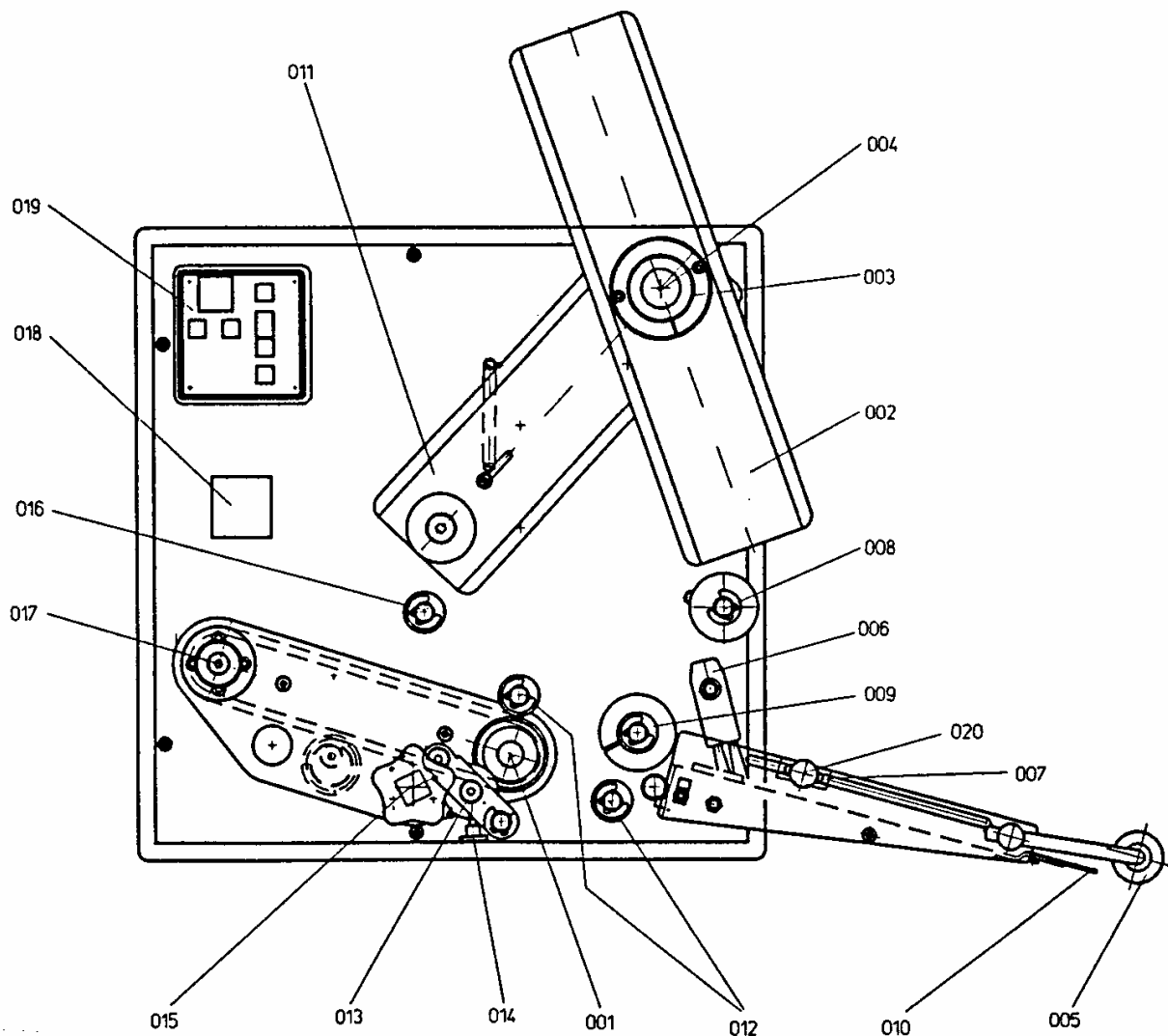
*Figure 1 Dispensing mechanics*

At the dispensing edge (010) the label is separated from the backing paper. By means of a soft (005) roller the label is applied on to the product.

Roller (012) makes sure that the material is always guided properly around the dispensing edge. Drive roller (001) keeps the transport speed of the material constant.

Deviator rollers (012) guide the backing material around the drive roller (001). The pressure mechanics (013) press the backing paper against the drive roller (001).

With the handle (015) you may open and close the pressure mechanics (013) . When inserting the material the pressure roller has to be opened.

Dispensing is only possible when the handle (015) is in the closed position. Via the deviator roller (016) the backing paper is guided to the rewind mandrel (017). The cone between the 4 pins can be pulled out to allow the reward backing paper to be removed.

Except for the drive roller (001) and the material brush (006) the labeller has no wearing parts. The operator panel (019) is described in the next chapter.

A threading diagram is affixed to the front of the machine, which shows how the label material should be threaded through the machine.

Screw (014) secures the position of the pressure roller (013) in a lateral direction. In order to achieve a reliable run of the label web position, adjust the roller to the centre of the label web.

## 2.2   Operator panel

The operator panel (Figure 2) of the 230 is shown below, it has a 4 digit LED display and 4 membrane keys.
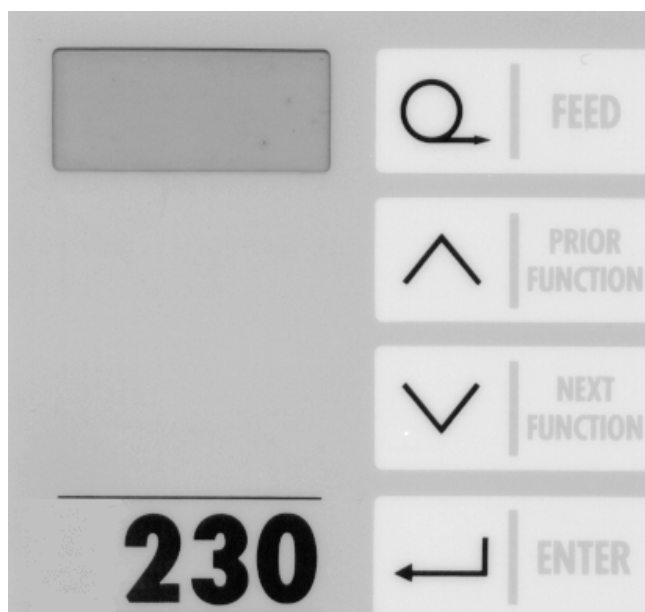


*Figure 2 Operator panel*

The 4 membrane keys have following functions:

**FEED:** By pressing this key one label will be dispensed. When the machine displays INIT pressing this key will start initialisation of the machine. An initialisation has to be made each time a new material is used. If the FEED key is pressed and held as the machine is turned on then the machine carries out an automatic initialisation of the label parameters "CONT" and "LPIT".

**PRIOR:** This key moves up the menu (prior function) or increases the value of a parameter. If the up arrow key is pressed and held as the machine is turned on the product menu is selected.

**NEXT:** This key moves down the menu (next function) or decreases the value of a parameter. If the down arrow key is pressed and held as the machine is turned on the standard menu is selected.

**ENTER**: This key is used to enter or exit a menu point or to cancel a warning or error message.

When the keys have different meanings, it will be explained in the relevant menu description.

## 2.3   Plug board

The plug board is shown in Figure 3. Beside the mains switch and the mains cable socket there are some more holes for optional functions. Standard execution in this machine is one I/O plug prepared for the product sensor. The connection of the other plugs is described in chapter Connections.

If you use the optional connections, it is strongly recommended to do this by means of the optional available SUB-D connectors. This ensures best EMI stability of the machine.

> ⚠ **CAUTION! -  The fuse holder setting you have to select according to your local main voltage (100, 120, 200 or 230 V). You carry this out by taking off the fuse holder and position the fuse holder insert accordingly.**
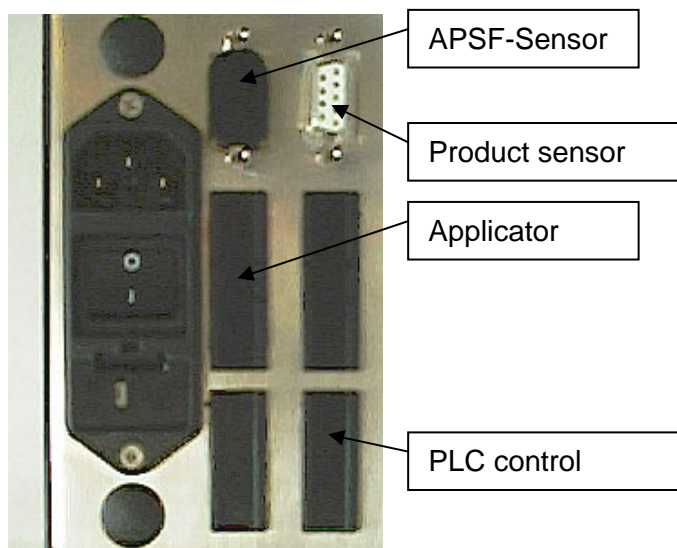


*Figure 3 Plug board*

## 2.4   Electronic

As standard the complete electronic is integrated in the machine. For special requirements (water protection e.g.) a machine version the electronic is housed in a separate cabinet is available.

# 3. Preparing the machine

In this chapter you will learn how to install and adjust the labeller. After this step has been completed you will be ready to learn how the labeller's parameters can be adjusted to suit your particular production requirements.

## 1.1 Installation

### 1.1.1 Unpacking of the unit
- For removing the unit off the box, don't hold the machine on the dispensing edge to prevent disadjustment off the machine.
- For mounting the machine, a complete system of holding tools is available. Ask your representative.
- Take care that the machine is safe and stable mounted.
- There are rotating parts on the machine. Do the necessary actions to prevent that anybody can be caught from these parts.

### 1.1.2 Connection of the machine

Before connecting the machine to the mains, check the correct setting of the line voltage. For the connection of sensor, applicators e.g. see the chapter connections. Fix all cables to prevent accidents and damaging of cables. Have also a look to the EMI chapter for proper machine operation.
For checking of correct operation of sensors, applicators use the check functions SCHK, I_CH and O_CH.

### 1.1.3 General setting

Normally the setting is done, but before operation check and note the general dispenser configuration: dispenser direction, machine type, applicator mode, and APSF function.

# 1.2 Prepare dispensing

## 1.2.1 Insert material

Insert your label material in the machine to follow the instructions in the chapter Operation / Threading.

## 1.2.2 Define label data

For correct dispenser operation, you have to tell the machine the length of the label and adjust the label sensor. Normally this is done automatically. For this follow the instructions in chapter Operation / Initialise material.

There are some reasons the automatic initialisation is not possible:

1. Using another then the standard optical label sensor
2. Label material with a low contrast ratio between label and backing paper
3. Labels with holes inside the label

In this case, you have to set one or both of the parameter manually.

Activate the **extended standard menu** to do the settings by:

- Pressing both keys NEXT and PRIOR simultaneously
  Display:     **CODE**

- Password **CODE** entering:
  1 time pressing the key PRIOR FUNCTION
  2 times pressing the key NEXT FUNCTION
  3 times pressing the key ENTER
  Display:     **LPIT**

- Setting the label length
  Enter the LPIT function by pressing ENTER. Measure the distance from one label edge to the edge of the next label. Enter the value in mm by using the function keys. Press ENTER to leave the function. See also the information below.

- Change the setting of the label sensor
  If another label sensor then the Wenglor type will be used, call the CONT function and set the value to any manual value (e.g. M006.).
  If the contrast ratio is low, follow the instructions to adjust manually contrast.

- To store the setting permanent leaves the menu with the QUIT function. If you power off the machine without quit all modification are lost.

- By pressing the key FEED one label can be dispensed if you are in the parameter selection.

**Setting LPIT manually**

To initialise labels with cut outs such as the one shown below - the "LPIT" parameter should be used to enter the label pitch of the label web.
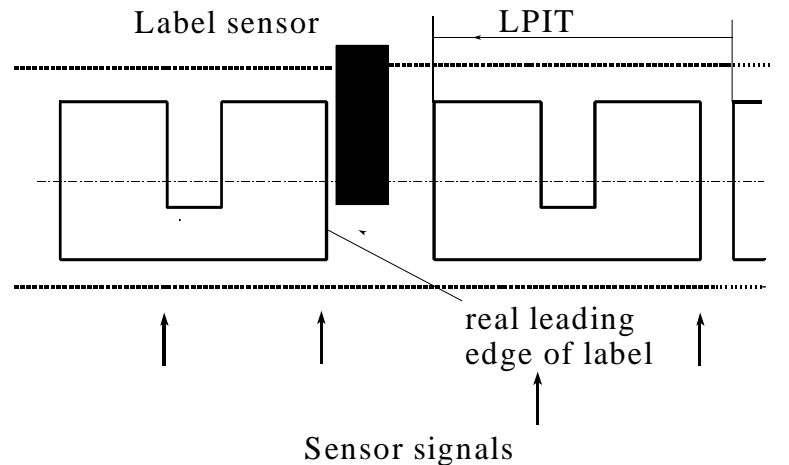


*Figure 4 Definition of LPIT*

All other label edges seen by the label sensor will be ignored until the distance adjusted in the "LPIT" parameter has been fed through the label sensor.

**Manual adjustment of the CONT parameter**

- Remove a label from the backing paper and slide it inside the sensor.
- Reduce the value with the PRIOR key until the LED switched on.
- Press the key NEXT until the LED switched off. If there are marks an the backing paper do the measurement on this position.
- Note the value GAP xxx
- Slide the backing paper including label inside the sensor. Use the lightest position on the label for the adjustment.
- Increase with the NEXT key the value until LED lights again. Note the second value GAP yyy
- Calculate the contrast value by the formula (xxx + yyy) / 2 and set it.
- Manual adjustment is completed.

With a difference of less than 20 an operation with this kind of sensor is not possible (sometimes two or more labels are dispensed).

## 3.1.1 Capacitive label sensor

For transparent labels the standard photo label sensor doesn't work. In this case, use a mechanic or a capacitive label sensor.

**Note:** For correct automatic initialisation, the CONT parameter has to be set to a manual value, if you using not the standard photo sensor.

A mechanical sensor is limited in the speed. The bounce at the label edges produces wrong signals.

There is optional a capacitive label sensor available (Leuze GK14/24L).
Adjustment of the sensor is carried out as follows (Figure 5):
1.  Set sensitivity to maximum by turning the Potentiometer clockwise. Then rotate ½ turn anticlockwise.
2.  Remove label material out of sensor.
3.  Perform base adjustment, that both LED "base adjustment" have the same brightness.
4.  Put label with backing paper inside the sensor. Doing this, the LED "switch output" and the left LED "base adjustment" are switched off. With backing paper only in the sensor both LED are switched on. If the LED are lightning with label inside the sensor, increase sensitivity in ¼ turn steps by rotating the sensitivity clockwise.
5.  Check the adjustment over the complete length of label.
Carry out the above adjustment after mounting, cleaning or increasing sensitivity.
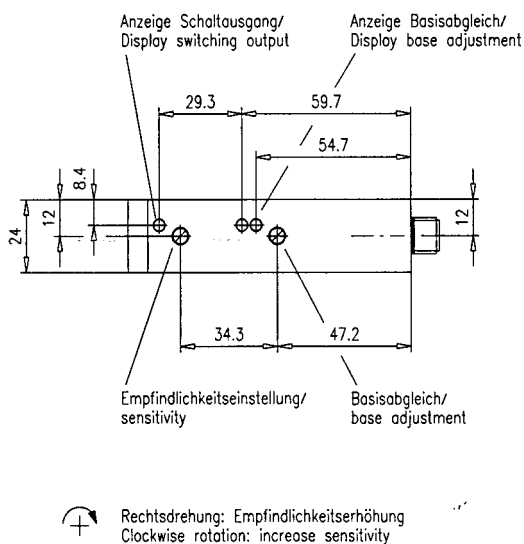


*Figure 5 Capacitive sensor*

## 3.2   Label guide

On some of the axles, they're guiding clamps. Adjust the clamps near the machine so all have the same distance to the front plate (31.5mm). The outer clamps should be mounted that the guide but not bend the label material.
The front of the V-dispensing edge has a rot, which can be adjusted for straighten the material guiding. Spend several labels by pressing the dispenser FEED key. If the material guiding is running out of the guiding way, adjust the rot by loosing two screws at the dispensing edge.

With a L-dispensing the adjustment is done by move the tail sheaves behind the dispensing edge.

## 3.3   Adjust dispense function

For an operation without any trouble and high label accuracy, tree adjustments are required:
* Label position on the dispensing edge: stop position
* Dispense speed
* Label position on the product

The adjustment should be done in the same order, because parameter like the stop position depends on the setting of the stop position and the dispensing speed.

### 3.3.1   Stop position

The first step is to adjust the stop position. This is the basic adjustment of the dispense process. Also in case of problems with the machine check if the stop position is okay.



*Figure 6 Stop position*

The stop position should be adjusted so that the label stops at the dispensing edge up to 3 mm behind.

For a correct operation of the automatic label compensation, they will compensate a missing label on the web, first the distance between label sensor and dispensing edge has to be defined. Do this by calling the DIST function in the configuration menu. Check the setting by removing a label before the label sensor from the web. Give a start signal to the machine by triggering the start sensor (not the FEED key) and see if the compensation is done on the right position. Do the fine adjustment with the STOD function.

### 3.3.2   Fixed dispensing speed

The second step is to adjust the dispense speed. If an APSF sensor is used see 3.3.3.
If an applicator is used, then the dispense speed has no influence to the dispense process. Continue with 3.3.4.
Set POS to the distance between start sensor and dispensing edge. If installed remove the roller to press the label onto the product. Now try to dispenser one product. If the label has wrinkles reduce the speed VELO. If the product peels out the label, so the stop position of the next label is different to the last position increase the speed. Normally your dispense speed should be a little bit higher than your product speed.

### 3.3.3    Automatic dispensing speed (APSF)

With a connected rotary encoder, the dispensing speed follows the measured product speed. To adjust the speed use the EGRA function located in the extended standard menu. The measured speed will be displayed in the VELO function. Do the adjustment in the same way described for fixed speed.

### 3.3.4    Label position on the product

At least adjust the position of the label on the product with the POS function or with the STAD function, if an applicator is in use.

### 3.3.5    Product data bank

Save your setting in one of the product data banks. If different products and / or labels are in use up to nine different combinations could be stored. Define and store the different product data. The select the product data bank mode by holding the PRIOR key during power on. Switch back to normal mode by holding the NEXT key.

# 4. Operation

This chapter describes the operation of the machine.

## 4.1 Safety recommendation

**CAUTION!**

- **Before connections to the mains check the correct voltage selection.**
- **Use only original spare parts for service.**
- **Open of the cover is only allowed authorised personal.**
- **Handling of the machine is permitted only trained personal.**
- **Be careful on operation, fingers, hair, clothes, jewellery, etc. may be caught by and get into rotating axles.**

## 4.2   Inserting label material

**Attention:**

- Before threading the new material, the waste paper should be removed.

⚠️ **CAUTION! - Isertion/exchange of material should be carried out only by especially instructed personal.**

Threading of the label material is shown down below on the threading diagrams for the right-hand and the left-hand version.
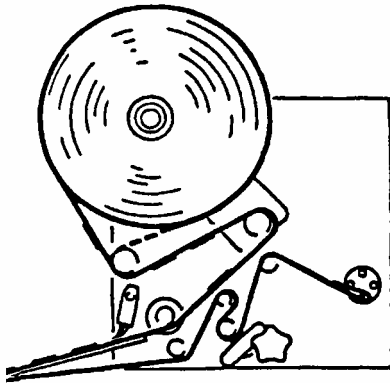
**left hand version**                                    **right hand version**
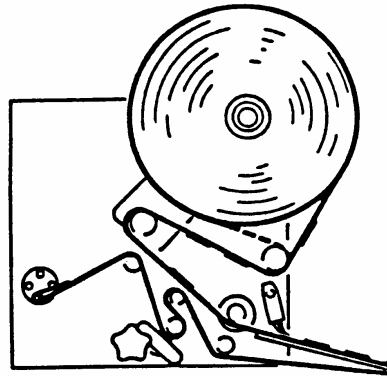
*Figure 7 Threading diagram*

- Hang document material in reel holder in a way to ensure unwinding that label in the printer section is on the top. Put outer guide disk onto mandrel. The two guide plates keep the label roll reliably in position on the unwind mandrel.
- Guide material around the dancer arm.
- Labels behind the dispensing edge should be removed. The material brush has to be positioned in a way, that the material is kept tight. From time to time, it is recommended to reverse the mounting of the brush while you are loading a new label roll.
- Adjust the pressure roller before the rewind, so that it is right in the middle of the material. Close the pressure roll and turn the roll 2 or 3 times, so that the material is threaded. Check that the material is guided straight.
- Check correct position of the label sensor.

# 4.3 Initialise new label material

The machine requires data of the label material in use i.e. label length and opacity of the label and backing material. In most cases, those parameters can be scanned during automatic initialisation. This is not always possible.
During initialisation, the machine uses its label sensor to determine where the labels are on the label web and the distance between the leading edge of labels (the label pitch) so that they can be positioned correctly.

There are several modes of initialisation:

- Automatic mode: The machine measure the setting
- Manual mode: The operator measures the label parameter and keys in the values.

In most cases, initialisation should be executed in fully automatic mode. For fully automatic initialisation, the "LPIT" and "CONT" parameters should be set to "AUTO". Initialisation can be executed by pressing the <FEED key> whenever the message "INIT" is displayed by the machine.

The message "INIT" is displayed in the following cases:

a) if the <FEED> key is pressed and held during power up
b) on return to the standard menu after the "CONT" or "LPIT" parameters have been changed to automatic mode
c) on return to the standard menu after the configuration menu has been used
d) after clearing the error messages E__0 or E__1 in the standard menu. (If the feed key is pressed while another parameter is displayed, the data from the last initialisation is held and the first label edge detected is simply moved to the position defined by the "STOD" parameter)

To start initialisations simply press the <FEED> key when "INIT" is displayed.
The machine will slowly feed the label web while it searches for the gaps between labels and measures the label pitch. When the machine has determined this information it will move the first label edge found during the initialisation process to the position that has been adjusted with the "STOD" parameter. After initialisation has been completed successfully, "ON" is displayed.
Initialisation can only take place in the standard menu; it is not required in the product menu since all label data is already stored in the machine's memory. After a E__0 or E__1 message has been cleared whilst in the product menu the first label edge detected at the next press of the <FEED> key will be moved to the position defined by the "STOD" value stored in the machine's memory.
However, when changing to a new product bank or changing label rolls the FEED key should be pressed once so that the label sensor can find the next leading label edge and move it to the correct dispense position previously defined by the STOD parameter

## 4.4 Control of dispense unit

### 4.4.1 Dispenser Menu selection

Turning on the mains switch and at the same time pressing one of the panel keys, you may select between several options:

| PANEL KEY & mains switch | Function | Display message |
|---|---|---|
| FEED | Material initialisation | INIT |
| NEXT FUNCTION | Standard menu | ON |
| PRIOR FUNCTION | Product menu | PD0n |
| ENTER | Configuration menu | CODE |

Press the key as long as the display shows the version number. One of the above mentioned messages appears in the display. Calling the product menu is only possible, if at least one product bank has been programmed.
If you do not press a panel key while turning on the machine the same menu is active that has been used before the machine was switched off.

### 4.4.2 Missing label function and web breaks

The missing label function stops the label web in the correct position even when a label is missing from the label web. If there are more than 3 missing labels from the web then the machine will stop and give the correct message E_1.
If the label web has broken or come to an end then the machine will no longer be able to find the next leading label edge and so after more than 3 signals from the product sensor the error message E_1 will also be generated.

### 4.4.3 Display and data input

The operator panel controls the operation of the machine. Data can be displayed and changed. The displays have different meanings:

• Parameter selection:
  In the display a parameter is shown, e.g. POS, STAD, or PD02 (product menu no. 02). By pressing the keys FUNCTION another parameter can be selected. By pressing the key ENTER the data is displayed.

• Data display:
  The display shows the values of the parameters (e.g. 0123) or possible adjustments e.g. (AUTO). Pressing the FUNCTION keys changes the data value. By pressing the key ENTER the data input is completed and a new parameter is shown.

- Error display:
  If the display shows e.g. E__XX, the dispenser has recognised an error. A warning is shown by W_XX. As soon as the error has been corrected, you may erase the message by pressing the key ENTER and you will get back to the status the machine was in before the error was indicated.

Note: Data entered in the standard menu are not stored, if the machine is switched off. If you need to store data you have to use the extended menu. Please check if it is of help for you using the product menu in your application.

| Display | Menu function | Function data value |
|---------|---------------|---------------------|
| ON | Labeller ready | |
| OFF | Label function suspend | |
| POS | label position on product | Up to 999.9 mm |
| STOD | Label stop position at the dispensing edge | Depends on setting of DIST, Label length and RAMP |
| VELO | Dispensing speed | 0.2 ... 30.0 m/min |
| STAD | delay time before labelling starts | 0,1 ... 999,9 ms |
| BLOW | apply time | 0,1 ... 999,9 ms |
| INIT | Initialisation of label material (CONT and LPIT are measured according to label size) | Appears after E__0, E__1 and Power on + FEED key depressed, or if the values of CONT and LPIT are changed |

**Dispenser active** _____ **ON**

The dispenser is able to dispense labels.

**Dispenser stopped**_____ **OFF**

The dispenser function is stopped. Single labels could be dispensed with the FEED key.

**Material initialisation** _____ **INIT**

A new initialisation of material is necessary. Pressing the FEED key will start the initialisation.

**Label position**_____**POS**

The position of the label can be changed by the parameter POS while the machine is in operation. The display is presented in 1/10 mm and means the distance between product sensor and labelling position of the product. The display value 0500 would mean 50.0 mm. By

pressing the key PRIOR the value is increased, i.e. the label is put on later. By pressing the key NEXT FUNCTION the value is decreased and the label is put on earlier.

The labelling position is also changed by variation of the product speed. In this case first control you product speed and the dispense speed VELO. Only if both speed matches adjust the position with the POS function.
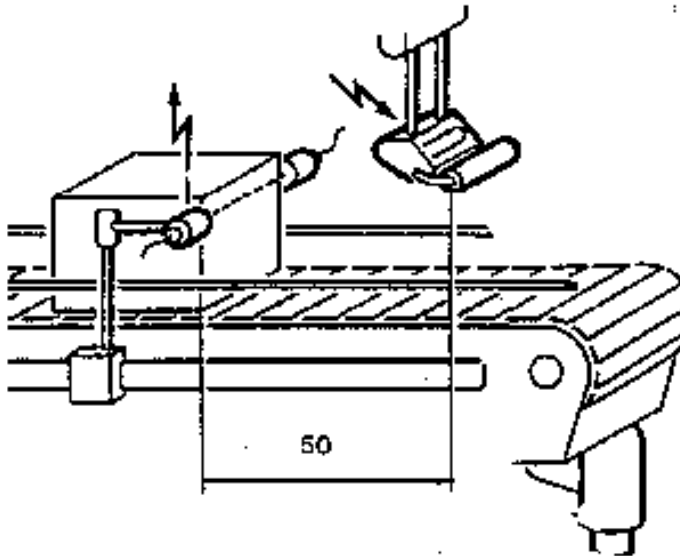


*Figure 8 Label position*

## Stop position _____ **STOD**

The stopping position (STOD) defines the position where the label stops after it has passed the label sensor. The value represents 1/10 mm. In the example 0160 has to be adjusted by pressing the FUNCTION keys. If an increased value is chosen, the label is advanced further, in case of decreased values the position is closer to the label sensor.
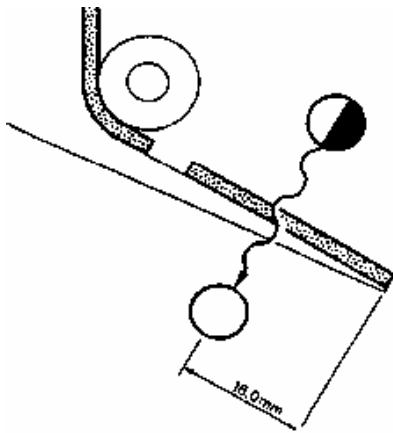
*Figure 9 Stop position*

## Dispense speed _____VELO

The speed value VELO displays the dispensing speed in 0.1 m/min. The product conveyor speed has to be constant to assure accurate labelling. A change of the product speed causes a different position of the label on the product. In case of inaccurate labelling, it should be verified, if the speed of the dispenser and your product match together. This is done automatically if the optional automatic speed follower (APSF) is installed.

If the machine is equipped with an applicator, two parameters in the standard menu can be changed. The delay time which specifies the moment when the applicator must put the label onto the product and the blow time - how long the applying of the label should take.

## Start delay_____STAD

By the aid of the parameter STAD the period of time between the recognition by the product sensor and the dispensing of the label onto the product is determined. The time units are ms, the time is adjusted by the keys FUNCTION.

## Blow on time_____ BLOW

The labelling time BLOW indicates, for how long the applicator should apply the label onto the product. This time is displayed in ms also. BLOW is equivalent to APT2, which is found in the extended menu.

## Product menu_____ PD0n

This menu can be used for storing data for different labels and products. 15 different sets of product data can be programmed.

If you want to switch to another product, select the respective product number by pressing NEXT and PRIOR, then press ENTER. Now the new product data are activated.
To change the labelling parameters you can call the extended menu. After leaving this menu, your product data will be automatically updated.

The labeller carries out the labelling of your products completely automatically.
Check now and then:

- if there is still enough labelling material on the unwind roll
- if an error has been displayed and the machine no longer effects labelling
- if the label is placed correctly onto the product. If this is not the case, correct the respective parameter in the standard menu.

Control is even simpler if you use an OD-control. The OD-sensor measures the diameter of the material roll and indicates a warning message W__5 as the label roll diameter gets too small, i.e. there are only a few labels left on the label roll. To the warning output, you may connect an alarm indicator, an optical or acoustic signal can be triggered.

## 4.5  Maintenance

The machine can be easily maintained and has only a few wear parts. If you change the material, note if any glue or waste labels are stuck on the rolls or dispensing edge. In this case you have to clean the respective parts. The machine has to be cleaned at least once a week. Glue and waste labels have to be removed from the rollers, the dispensing edge, the material brush, and possibly from the applicator. All rollers have to be cleaned from any grease. We will supply a special cleaning set for this. The material label sensor has to be cleaned from dust regularly. The material brush should be turned around whenever the material is changed. Any glue has to be removed from the brush. If there is a soft roller at the dispensing edge for applying the label to the product, check if the roller is damaged or dirty. Replace it if necessary. The unwind has to operate in such a way, that the dancer arm does not bounce to its end position. If this is not the case, the friction mechanism has to check.
If the backing paper is not wound up accurately, the belts have to be tightened.

**CAUTION! -  Check the electrical connections, especially the mains cable for unreliable connection.**

# 5. Menu structure

The touch panel keys or the optional interface can change labeller parameters. The last entered parameters are the actual ones the machine works with. Programming via the interface is described in **chapter Serial interface.**

There are 2 levels for parameter adjustments. The first one is for parameter selection. With the keys FUNCTION a parameter is selected. By pressing the keys ENTER the second level can be reached. Pressing the keys FUNCTION can change the parameter values. By pressing ENTER you quit the parameter adjustment and the next menu point is shown. For some functions the change of values is effected immediately, for others when leaving the menu point. Details in the menu functions.

There are 4 different menu structures:

- **Standard menu**
  This menu is used for normal operation. The most important parameters for the production can be changed here. The adjustments are lost after turning off the machine.

- **Extended standard menu**
  This menu offers additional parameters and functions to those in the standard menu. Any adjustments made in the extended menu are stored on quitting the menu and are maintained even if the machine is then turned off.

- **Product menu**
  If data banks are stored in the extended menu, the product menu can be activated. In this menu, programmed data banks only can be selected. Changing parameters in this menu is not possible. When storing data in a new data bank, the current adjustments are saved to the new product data bank. You may change data values of a stored data bank by loading the data from the extended standard menu, modifying them and resaving them in a data bank.

- **Configuration menu**
  In this menu, you configure the machine according to your applications. Additionally you have access to service test functions. This menu is mainly dedicated to service technicians. All current parameter settings are stored on quitting the configuration menu and are maintained if the machine is then turned off.

•

| Power On | | | |
|---|---|---|---|

| at power on | ∨ + ∧ | at power on | ↵ at power on or ∨ + ∧ |
|---|---|---|---|
| | CODE | | CODE |
| **Standard menu** | **Extended menu** | **Product menu** | **Configuration** |
| | INIT/ON/OFF | INIT/ON/OFF | INIT/ON/OFF |
| ✎ **Direct** | LPIT | PD01 | DTST |
| INIT/ON/OFF | CONT | PD02 | P_S_ |
| POS | SENS | PD03 | MACH |
| STOD | STOD | PD04 | MDIR |
| VELO | PRDL | PD05 | MLAB |
| | ✎ POS | PD06 | APSF |
| ↘ **Applicator** | ↘ STAD | PD07 | APPL |
| INIT/ON/OFF | VELO | PD08 | I_CH |
| STAD | STST | PD09 | O_CH |
| BLOW | SLEW | PD10 | FACT |
| | ☺ EGRA | PD11 | BAUD |
| | ↘ APT1 | PD12 | ⌨ PARI |
| | ↘ APT2 | PD13 | ⌨ SBIT |
| | ↘ APT3 | PD14 | ⌨ DBIT |
| | ↘ APT4 | | RECY |
| | ASTP | | DIST |
| | SAVE | | LABC |
| | LOAD | | QUIT ⟲ |
| | PDT | | |
| | QUIT ⟲ | | |

| ✎ Direct dispense | ↘ Applicator active | ☺ APSF on | ⌨ only if Baud not set to NONE |
|---|---|---|---|

## 5.1   Standard menu

Usually this menu is used for labelling. All important parameters can be changed while the machine is running. After turning power on, the standard menu is active, unless the product menu was on before the machine was switched off.

If the product menu is active and you want to use the standard menu, switch off the machine again. Press the key NEXT FUNCTION while switching on the machine and the standard menu is active. In the standard menu you have access to all important parameters for labelling. The number of parameter and its kind depends on how the configuration has been made. Change of parameters is active immediately. Changed values are lost when turning off power. If values need to be stored, the extended standard menu has to be used. All available commands are listed down below.

| Display | Function | Values |
|---------|----------|--------|
| ON | Normal operation | |
| OFF | Stop labelling operation | |
| INIT | Initialisation of label sensor and label pitch detection | After status of E__0 and E__1 only |
| POS | Position of label on the product | Up to 999.9 mm |
| STOD | Stop position of label at the dispensing edge | 0,0 .....  200,0 mm |
| VELO | Labelling speed | 0.2 ... 30.0 m/min |
| STAD | Delay time for labelling with applicator | 1 ... 9999 ms |
| BLOW | apply time | 0.1 ... 999.9 ms |

**Initialisation** _____ **INIT**

The function **INIT** is available only, if required for a new initialisation. Which is the case under the following circumstances:

a)      Status error message E__0, the feed key was pressed with pressure roller open
b)      Status E__1, while moving the label web no labels have been recognised over a web length of 4 labels.
c)      During power on the FEED key was held depressed.
d)      CONT or LPIT were changed to automatic mode.

> **Note**: A new initialisation after an E__0 or E__1 message is not absolutely necessary if you sure that the label parameter are all right. Then leave the INIT display with the NEXT key and press only the key FEED to reposition the label at the dispensing edge.

## Label position _____POS

Function: The start position **POS** defines when the labelling should take place, after the product has passed the product sensor. Changing the value for POS changes the applied label position on the product.
Only available if no applicator is used.
Range: up to 999.9 mm in steps of 0.1 mm.


## Start delay _____STAD

Function: Delay time for the dispensing after the product has passed the product sensor. This value influences the position of the label on the product.
Only available if an applicator is used.
Range: 1 to 9999 ms


## Stop position _____ STOD

Function: Stop position of the label once the label edge has reached the dispensing edge. The STOD value defines the actual stop position of the label in steps of 0.1 mm.

With this adjustment the label can be made to stop directly at the dispensing edge. To make the label stop after the dispensing edge the value of STOD should be adjusted accordingly.

- Select the parameter **STOD** by pressing the keys FUNCTION.
- By pressing the key ENTER the data input is activated.
  Range: 0.0 .... 200.0 (mm).


## Labelling time_____ BLOW

Function: The labelling time defines how long the applicator should blow the label onto the product.
Only available if an applicator is used. BLOW is identical with APT2
Range: 1 to 9999 ms


## Dispensing speed _____VELO

Function: This parameter defines the speed for the label material. Only available if no applicator is used: With an automatic product speed sensor the actual speed is shown.
Range : 0.2 ... 30.0 m/min

## 5.2 Extended standard menu

**The extended standard menu** offers additional parameters you may use in your application. On quitting this menu the current parameter settings are stored in memory. Further changes are also written into memory. As long as this menu is active, no labelling is possible. By pressing the key FEED, however, single dispense of labels is possible.

To get into the **extended standard menu** a password **CODE** has to be entered. The display shows the first menu point. A survey of all parameters is shown below.

| Display | Function | Data value |
|---------|----------|------------|
| LPIT | Label pitch | AUTO/5...999 mm |
| CONT | Label sensor contrast value | AUTO/1...200 |
| SENS | Sensor status | LAB or GAP |
| STOD | Stop position of label at the dispensing edge | 0.0 .... 200.0 (mm) |
| PRDL | Product length (inhibit of further product- sensor signals) | AUTO, 5 ... 999 mm |
| POS | Position of label on product | Up to 999.9 mm |
| STAD | Delay time for start of applicator cycle | 1 ... 9999 ms |
| VELO | Labelling speed | 0.2 ... 30 m/min |
| STST | Check adjusted EGRA value | see text |
| SLEW | Slew speed | FAST or SLOW |
| EGRA | Electronic gear ratio adjustment | 100 to 500 |
| APT1 | Dwell time for applicator | 1 ... 7500 ms |
| APT2 | Blow on time for applicator | 1 ... 7500 ms |
| APT3 | Restart delay | 0 ... 5000 ms |
| APT4 | Time constant compensation | 0 ... 500 ms |
| ASTP | End of air stream signal | -20 ... 50 mm |

| Display | Function | Data value |
|---------|----------|------------|
| PDT | Printer dwell time<br>Printer hold time (is 50% PDT) | OFF - 1000ms |
| SAVE | Store data in the product data bank | PD01 ... PD09 |
| LOAD | Load data from a product data bank | PD01 ... PD09 |
| QUIT | Leave the extended standard menu | standard menu |

**Label pitch** _____**LPIT**

Distance between 2 labels on the label web, measured from leading edge to leading edge. The distance could be set manual or an automatic length measurement is also possible. In case of automatic mode the length is measured with the INIT function. This should be normally done, so label material could be easy changed. Only under special condition the manual mode has to be used.
There are three different modes:

    AUTO    Select automatic measuring mode
    A111    The automatic mode is on and a distance of *111 mm* was measured
    M111    The manual mode is selected and a length of *111 mm* was entered.
Range: AUTO or 5 ... 999 mm.

**Label contrast** _____ **CONT**

With this function the sensitivity of the standard label sensor could be adjusted. If AUTO is adjusted, the machine scans automatically. The automatic modes doesn't work with transparent labels. In case of another type of sensor (mechanical or capacitive) the setting has to be manual.
There are three different modes:

    AUTO    Select automatic measuring mode
    A111    The automatic mode is on and a contrast of *111* was measured
    M111    The manual mode is selected and a contrast of *111* was entered.
Range: AUTO or 1 ... 200.

**Sensor status**_____**SENS**

Function: Status of label sensor is indicated, i.e. there is a label in the sensor the abbreviation LAB is displayed and GAP is shown if there is only backing material inside the label sensor.
Can be used for all sensor types i.e. mechanical or electronic ones.

**Stop position** _____ **STOD**

Function: Stop position of the label at the dispensing edge.
Available: Always
Range: 0.0 .... 200.0 mm


**Product length** _____**PRDL**

Function: The product length avoids multi labelling in case of difficult products. Normally it is set to AUTO. This means that the product length is set to the label length.
After the product sensor has detected the edge of the product all signals that might be triggered while the product is passing the product sensor are inhibited. This function can be helpful in cases where the product is transparent or has several detection marks or edges. Such a case is shown below.
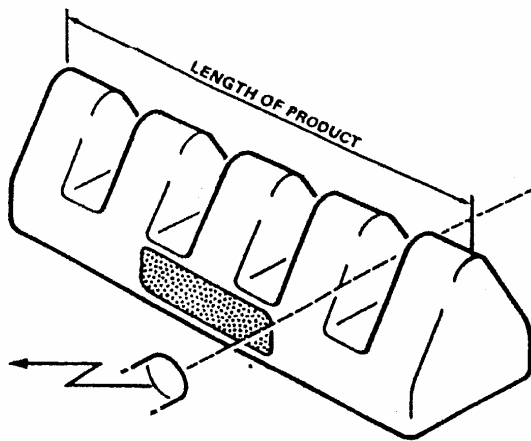


The product sensor supplies several signals while the product passes the product sensor. If the PRDL is not adjusted according to the dimension of the actual product the warning W_0 may be given of false multiple product detection signals. The defined product length suppresses all signals after the first product sensor signal has been received.
By pressing the keys FUNCTION the parameter **PRDL** is selected. The data input is selected by pressing the key ENTER.
If an applicator is fitted to the labeller, the product length is not defined as a distance but as the **time** that the product needs to pass the product sensor. The **time** is adjustable between 5 and 9999 ms.
Available: Always
Range: AUTO or 5 - 999 mm


**Label position**_____**POS**

Function: Position of label on the product.
Only available if no applicator is used.
Range: up to 999.9 mm in steps of 0.1 mm.

**Start delay** _____**STAD**

Function: Delay time for the dispensing by means of an applicator after the product has passed the product sensor. This value influences the position of the label on the product.
Only available if applicator is used.
Range: 1 to 9999 ms


**Dispensing speed** _____**VELO**

Function: The labelling speed may be adjusted with the parameter **VELO.** Values between 0.2 and 30.0 m/min are possible. The speed has to be adjusted so that it matches the product speed.
When an applicator is fitted to the machine, this parameter defines how fast the label will be dispensed on to the applicator.


**EGRA value check**_____ **STST**

Use this function to adjust the EGRA value. If the drive-roller speed is higher than that of the conveyor then increase the EGRA value, if it is lower decrease the EGRA value so that the conveyor speed and drive-roller speed match.


**Slew speed** _____ **SLEW**

Function: For some situations the labeller can run with a different, higher speed. This occurs during compensation of  a missing label on the web, positioning the label at the dispensing edge during initialisation or after pressing the feed button if the APSF-mode is selected. The resulting speed depends on the selection (FAST or SLOW) and the APSF-mode.

| SLEW setting | FAST | SLOW |
|---|---|---|
| APSF off | Max speed | VELO |
| APSF on | Max speed | 12 m/min |


**Electronic gear ratio adjustment** _____ **EGRA**

The parameter EGRA appears in the extended menu only after the APSF function has been switched on.
The range of the EGRA parameter is 100 to 500, representing from 1 to 5 encoder pulses per millimetre of conveyor movement. The full EGRA range can be used up to 30 m/min conveyor speed.
With an applicator there is no realistic limit to the conveyor speed and at very high-speeds an EGRA value at the lower end of the range should be used.


**Dwell time**_____ **APT1**

Function: Only used when an EP- applicator is necessary. It defines for how long the pneumatic cylinder is switched on.
Available only with applicator.
Range: 1 ... 7500 ms

## Blow on time _____ APT2

Function: Only used when an applicator is necessary. It defines for how long the label is blown onto the product.
Available only with applicator.
Range: 1 ... 7500 ms

## Restart delay _____ APT3

Function: This parameter defines the time for a next label dispense after the applicator cycling is completed.
Available only with applicator.
Range: 0 ... 5000 ms

## Time constant compensation _____ APT4

Used to control the labelling position when using an applicator in conjunction with APSF.
The parameter APT4 is set to the time that the label takes to reach the product from the start of the applicator cycle. For blow applicators this will probably be less than 25 ms, for EP (air-cylinder) applicators the time will be much more - possible 60 ms to 100 ms depending on the length of the air cylinder.
To calculate the correct value proceed as follows:

Set APT4 to 1. Run the conveyor at a fairly low speed such as 10 m/min and note the label position on the product. Now run the conveyor at a much higher speed such as 25 m/min and note how far the  label position has shifted back.

Use the following formula to calculate the correct value for APT4...

$$(\text{LABEL SHIFT (mm)} \times 60) / (V_{high} - V_{low}) = \text{APT4}$$

Vhigh represents the higher conveyor speed used (in m/min)
Vlow represents the lower conveyor speed used (in m/min)

eg. If the shift is 3mm and the conveyor speeds 10 m/min and  25 m/min are used the correct value for APT4 is:

$$(3 \times 60) / (25 - 10) = 180 / 15 = 12$$

The calculated value should then be tested by running the conveyor at a high and a low speed and checking that the placement position does not change. If the label position moves back slightly at higher speed then increase APT4 a little, if it moves forward at higher speed then decrease APT4 a little.

**Note:** The EGRA parameter must be set correctly as well as the APT4 parameter for correct label positioning on the product.

**End of air stream signal** _____**ASTP**

This parameter determines how long the air stream signal will remain active after the label dispense has finished. Valid in all modes (direct dispense, applicator, APSF and fixed-speed).

**Printer dwell time**_____ **PDT**

This determines the dwell time of the stamp-printer. A new dispense is prevented after PDT expires for a time equal to 50% of PDT.

**Save parameter in data bank** _____**SAVE**

Function: After selection this function you can save the current parameter setting to a data bank.
Always available.
Range:          NEW1 .. NE15          Create a new data bank
                PD01 ... PD15Overwrite existing data bank
                EXIT                  Leave function without modification

**Load data bank** _____ **LOAD**

Function: After selection this function you may load a predefined parameter setting.
Always available.
Range:          PD01 ... PD15          Load a defined data bank
                EXIT                  Leave function without modification

**Leave Menu finishing** _____ **QUIT**

Function: If this function is selected, you get back to the standard menu
Always available.

**Note:** Modified parameter values are only stored if the menu is left by using the QUIT function. If the power is switched off before leaving the menu by quit all modifications are lost.

## 5.3  Product menu

If parameters have to be changed because of different products and labels, the product menu can be used. The machine offers a data bank in which 14 sets of data can be stored.

If you want to switch to a particular product, select one of the product numbers by pressing NEXT or PRIOR and confirm with ENTER .The new parameters are valid now.

After switching to a new product bank the machine assumes the label roll has been changed or that a parameter such as STOD is different and so requires an initialisation of the label position at the dispensing edge. This is done by pressing the FEED key after loading a new product bank at which time the machine will move the first detected label edge to the dispense position.

**Note:** If the FEED key is not pressed after loading a new product bank the first detected label edge will be moved to the dispense position at the first signal from the product sensor!

**Note:** The function FACT available in the configuration menu clears all the product banks.

# 6.  Configuration

Adjustments in the configuration menu are necessary during installation of the machine only. In the **configuration menu**, the required optional functions can be selected. Some service support functions in the configuration menu will be useful for the service staff.

**Possible adjustments:**
- Recognition of the product at the leading or trailing edge
- Left or right hand version of labeller
- Machine type
- direct dispensing or several type of applicators
- Parameters for the interface

**Possible tests:**
- In/output test
- Test run without labelling

The function Factory initialisation resets all parameters to default values.

**Calling the configuration menu**
There are two ways to call the configuration menu:
- Press the key ENTER and switching on power at the same time. The display shows 'CODE'.
- Press the keys NEXT and PRIOR at the same time when a parameter function is displayed. The display shows 'CODE'.

The password has to be entered by pressing the following keys:

| | | |
|---|---|---|
| * | 1 time | PRIOR FUNCTION |
| * | 3 times | NEXT FUNCTION |
| * | 2 time | ENTER |
| * | 3 times | NEXT FUNCTION |

When the password is entered correctly, the display shows `DTST`. After pressing PRIOR or NEXT the next menu, point will be shown. If a wrong password was entered, you go back to the previous menu.

## 6.1 Handling the menu

The menu structure is shown in the following table. By means of the key PRIOR you switch to the prior function, and with the key NEXT to the next following function in the menu.
If you press the key ENTER the current parameter value of a function is shown. The current parameter value can be changed with the keys PRIOR FUNCTION or NEXT FUNCTION.
Values are stored by pressing the key ENTER.

| Display | Function of the parameter | Possible data entry |
|---------|---------------------------|---------------------|
| DTST | Test run without labels | |
| P_S_ | Product sensor detects at leading or trailing edge of product | LEDG, TEDG |
| MACH | Machine type | 230, 720, 330, 430 |
| MDIR | Motor running direction for left or right hand | <----   ---> |
| MLAB | Handling of missing label | NONE, WARN, ERR1, ERR2, ERR3 |
| APSF | Automatic product speed follower | YES, NO |
| APPL | Direct dispense mode, or applicators | DIR, ASA, EP, RVEP |
| I_CH | Test of inputs | |
| O_CH | Test of outputs | |
| FACT | Reset of all parameters to default values | YES, NO |
| BAUD | Baudrate of the interface | NONE, 300 to 192% |
| PARI | Parity bit | NO, 0PRT, ODD, EVEN |
| SBIT | Number of Stop bits | 1 bit, 2 bit |
| DBIT | Number of data bits | 7 bit, 8 bit |
| RECY | Recycle (simulates max labels/min) | see text |
| DIST | Distance label sensor to dispensing edge | 10 ... 999 mm |
| LABC | Number of dispensed labels | see text |
| QUIT | Return to extended standard menu | |

## 6.2   Menu functions

The menu functions are explained in detail here.

**Permanent test**_____ **DTST**

The permanent test makes a test run without using labels. In the display the numbers of dispense cycles is shown (see description LABC). Immediately after starting the function, the machine runs in a self-test. The test run works with all adjusted parameters. The test can be stopped by pressing the key ENTER.

**Polarity of the product sensor** _____ **P_S_**

The machine requires a start signal for each product to be labelled. After the start delay (STAD) the labelling starts. The signal is usually created by a light sensor at the conveyor. A PLC can also supply this signal. The light sensor supplies a signal when the light beam is interrupted by the product. By means of the function **P_S_** it will be selected whether the leading edge or the trailing edge of the product should trigger the signal.
Usually the trailing edge of a product is used. Reasons for detecting the leading edge can be:
-         shape of product (your should avoid detecting a radius or a declined edge)

In case of using other than the standard product sensor's, the meaning of the display can be reversed. The adjustment you need you may change with the keys NEXT or PRIOR.
Factory adjustment: **LEDG**

**Machine type** _____ **MACH**

The software is identical for several different machines. Choice the correct type.

**Dispensing direction** _____ **MDIR**

The machine is available in a right and left-hand version. In the right hand version the product transport is from left to right when you look to the front of the machine. The adjustment is done in the factory and should **not be changed**.
Factory adjustment: RIGHT

**Handling of missing label** _____ **MLAB**

There are several condition the dispenser is not able to dispense a product:

- the distance between products is too close
- an additional printer is not fast enough
- the loop in the ALX720 is empty (end of job, printer error)

With this function, you can decide how to react:

| NONE | Do nothing. The unlabeled product will be detected later in the line. |
|------|------------------------------------------------------------------|
| WARN | Set the warning output and displays W__0. The production continued. |
| ERR1 | Set the error output to stop the production line immediately and display E_10. |
| ERR2 | The first unlabeled product generates the warning. Two unlabeled products in a sequence set the error. |
| ERR3 | The error condition will be set at 3 unlabeled products. |

## Automatic product speed follower_____APSF

Under parameter APSF the automatic product speed follower function can be activated (ON / OFF). The APSF sensor is fitted to the conveyor and supplies signals that represent the speed of the conveyor. The installation of the sensor and the adjustment of the parameter have been carried out according to your application and should not be changed.
The compensation steps for the current conveyor speed are constantly recalculated rather than just when the product-sensor is triggered. This means that a change in conveyor speed between the time that the product is detected and the time it reached the dispense position has no effect on labelling placement accuracy.
There is no optimum EGRA setting. The compensation steps are calculated using the current EGRA setting rather than using fixed compensation step values for a predetermined EGRA setting and so any EGRA value works just as well.
At slow speeds the label dispense speed matches the conveyor speed exactly regardless of the EGRA setting. For instance if the dispenser needs to make 1.236 steps per encoder pulse then at the first four encoder pulses the dispenser will make one step but will then have fallen 4x0.236=0.944 steps behind. On the fifth encoder pulse the dispenser will make two steps and so be (5x0.236)-1=0.18 steps behind. The dispenser will always be less than one step behind. The dispenser thus always dispenses the correct amount of label in regard to the product movement even when the conveyor is starting from rest or coming to rest.

## Type of applicator _____APPL

In most cases, the label is dispensed directly onto the product. If this is not possible, an applicator has to be used. We offer a number of different applicators. In this function, the installed applicator has to be defined. You may select the applicator type you have ordered for your application (display shows 'ASA`,`EP`, RVEP or another applicator). In case of direct dispensing the function direct dispense has to be chosen:
Display shows 'DIR'.
The adjustment is done in the factory and should not be changed.

RVEP (ReVerse EP) operates as an EP applicator except that once the label has been dispensed onto the applicator the applicator cylinder is extended to wait for the next product to arrive. This provides more accurate labelling than with EP applicators because variation in the time it takes for the cylinder to extend does not affect the labelling position.

**Additional functions in the standard menu**
Depending on which parameter has been defined under APPL different menu functions are shown in the standard menu. If an applicator is used additional times BLOW and STAD for controlling the applicator cycling are available.


**Input and sensor check**_____ **I_CH**

To display the status of sensor's and inputs information are grouped in 3 blocks you can select by pressing the NEXT or PRIOR keys. The character for the inactive state is different to identify the various blocks.

Block 1 (inactive = 0)
| | | |
|---|---|---|
| N = | Power fail detection (only can case of malfunction) | |
| P = | Product sensor active | |
| A = | Signal from APSF sensor | |
| R = | Ready input stepper motor control | |

Block 2 (inactive = -)
| | | |
|---|---|---|
| I = | Inhibit input active | |
| L = | Unused input (Loop control on ALX 720) | |
| H = | Applicator home switch active | |
| E = | Applicator end switch active | |
| Z = | Horizontal home switch | |

Block 3 (inactive = .)
| | | |
|---|---|---|
| S = | pressure switch activated | |
| J = | Jumper 3 closed | |
| O = | OD control material active | |
| M = | Label sensor on material | |
| G = | Label sensor on gap | |

For a correct label sensor information CONT has to be adjusted before. Leave the function by pressing key ENTER.


**Output check** _____ **O_CH**

With the NEXT and PRIOR keys you can select the output you will switch on for testing. Leave the function by pressing key ENTER.
On selecting the O_CH function the display shows "1" and the first output is active. Using the up-arrow and down-arrow keys the user can select any one of outputs 1 to 8. Only one output is on at a time so that the user can easily see if he has any shorted connections (any output that is being turned on by another part of the program such as an error or ODC output will stay on until the error or ODC input is cleared).

                1 = terminal 15 = BLOWON
                2 = terminal 16 = AIRSTREAM
                3 = terminal 17 = CYLINDER
                4 = terminal 18 = PRINT_OUT
                5 = terminal 19 = WARNING

6 = terminal 20 = ERROR
7 = terminal 31 = READY
8 = terminal 32 = ODC_OUT / HORI_CYL

## Adjustment resetting_____FACT

This menu point sets all parameters back to the factory values. All parameters will be reset, so please note all your adjustments before. When you call this function the display shows 'NO`. After you have left by pressing the key ENTER there is no change.
When you change with the key NEXT to YES and press ENTER` all parameters are reset to default values.
Note:   This function also clears all product banks.

## Interface baud rate_____ BAUD

With this function the baud rate of the interface will be adjusted. This is an option of the machine. If you do not have this option, the parameter has to be set to 'NONE` to protect the interface and to avoid errors. The following baud rates are adjustable: 150, 300, 600, 2400, 4800, 9600 and 19200 baud. When calling the function FACT this parameter will be set to `NONE`. When the machine is delivered with the interface the baud rate is set to 9600. Select your baud rate by pressing the key NEXT or PRIOR . With the key ENTER the adjustment is stored.
Factory adjustment:   NONE

## Parity bit _____ PARI

The function is only visible if a baudrate is selected. The parity bit is necessary to check the data transfer. In case of wrong data transfer an error message will be given. The adjustment of both machines has to be identical. Usually the transfer is made without parity bit.
Possible adjustments:
    'NO`:       Not sending or receiving a parity bit
    `EVEN`:   produce a parity bit so that an equal number of `1` signals is created
    `ODD`:    produce a parity bit so that an odd number of '1' signals is created.
    `0PRT`:   The parity bit is always 0
By pressing the key NEXT or PRIOR the adjustment is selected and by pressing the key ENTER the function is finished.
Factory adjustment:   NO

## Number of stop bits_____ SBIT

The function is only visible if a baudrate is selected. This parameter defines the number of stop bits. By pressing the key function you can select between `1BIT` or `2BIT`. By pressing the key ENTER this function will be left.
Factory adjustment:   1BIT

## Number of data bits _____ DBIT

The function is only visible if a baudrate is selected. With this function you can select between 7 or 8 data bit protocols.
Factory adjustment: 8BIT

## Recycle (simulates max labels/min) _____ RECY

The Auto-recycle function, is used to determine the maximum possible cycle rate with the current parameter settings.
It will cycle through applicator cycles automatically by internally generating a product-start the instant a cycle has been completed and displays the average cycle rate per minute in the display. It also operates with no applicator selected by dispensing labels at the maximum possible rate. The maximum labelling rate for different values of PDT can be determined using the RECY function without having to physically connect the printer.

## Distance sensor to dispensing edge _____ DIST

This function defines the distance between the material label sensor and the dispensing edge. This value is shown in steps of 0.1 mm (e.g. 0456 means 45.6 mm). The measured value can be adjusted by pressing the key FUNCTION.
If the DIST value has been adjusted correctly the first leading label edge detected at initialisation will be moved exactly to the dispensing edge, as long as STOD is set to 0.0 (mm). This parameter is important for the missing label compensation. If it is not correctly adjusted a missing label on the material roll, will not be compensated correctly and the product will not be labelled.
Value range: 10.0 .... 999.9 mm

## Label counter _____ LABC

Each dispensed label increases the counter by 1. The capacity of the counter is for
999 999 999. The total number can be seen in 3 sections, press the keys FUNCTION as described down below:

Mnnn Knnn .nnn

- where M represents millions
- K represents thousands
- .represents units

On entering the "LABC" parameter the units are displayed. By using the arrow keys can then be used to change between the millions, thousands and units displays.
By pressing NEXT and PRIOR at the same time the counter is set to 0. By pressing the key ENTER the function will be left.

## Leave Menu finishing _____ QUIT

Function: If this function is selected, you get back to the standard menu

**Note:** Modified parameter values are only stored if the menu is left by using the QUIT function. If the power is switched off before leaving the menu by quit all modifications are lost**.**

# 7. Serial interface

The machine has a serial interface according to the standard RS232C. Via this interface parameters can be adjusted. All received commands are tested for syntax and legal value range.

Invalid commands and parameters are ignored. An error message is not given in this case. All commands received over the serial interface are tested for syntax and range; invalid commands and out of range parameter values are ignored. A warning message is not given in these cases. However in the case of framing, parity or overrun errors the warning "W__3" is generated.

The commands are made up of sequences of ASCII characters. Each command starts with "#" and "!" followed by a 4 character code. The reception of the "#" character indicates the start of a new command to the machine.

The codes are similar to the parameter names shown in the display.

## 7.1 Data of the serial interface

The pin connection of the interface plug is shown in the table below.

| Dispenser connector | | Signal description | | | PC | |
|---|---|---|---|---|---|---|
| 25 pol D-Sub | 9 pol D-Sub | Direction | Code | Description | 25 pol | 9 pol |
| Socket 2 | 3 | Output | TxD | Transmit data | 3 | 2 |
| Socket 3 | 2 | Input | RxD | Receive data | 2 | 3 |
| Socket 5 | 8 | Input | CTS | Clear to send | 4 | 7 |
| Socket 4 | 7 | Output | RTS | Request to send | 5 | 8 |
| Socket 7 | 5 | | GND | | 7 | 5 |
| Socket 20 | 4 | Output | DTR | | 6 | 6 |
| Socket 24 | | (if jumper on) | + 10V | For external use | 8 | |

All other pins are not connected.

Adjustable data values
Baudrate          150, 300, 600, 1200, 2400, 4800, 9600, 19200 Baud
Data bits         7 or 8 bits
Stop bits         1 or 2 bits
Parity            No Parity, Parity bit always 0, odd or even parity
Handshake         RTS/CTS

Factory      interface deactivated, at reactivation the parameters will be set to 8 data bits, 2
             stop bits and no parity bit.

## 7.2 Interface commands

The below described commands will change one of the labelling parameter. The values are not stored and will be lost when turning off power.
If the sequence nnnn is replaced by the character "?" then the current value of that parameter will be returned by the labelling machine as a 4 character string confirming the name of the parameter requested followed by 4 numbers representing the current value of that parameter. The character 04H terminates all return messages.

**Example**
PC send the message:        #!VELO?
Machine returns:            VELO0300<04H>

| Command | Description | Range |
|---|---|---|
| #!APOSnnnn | Value APOS | -0050 – 0100 mm |
| #!APPLnnnn | Applicator type | 0000 direct dispense<br>0001 ASA<br>0002 EP<br>0003 EP_U<br>0004 PLUA<br>0005 INDX |
| #!APSFnnnn | APSF function | 0000 off<br>0001 on |
| #!APT1nnnn | Applicator time | 0001 – 7500 ms |
| #!APT2nnnn | Applicator time | 0001 – 7500 ms |
| #!APT3nnnn | Applicator time | 0000 – 5000 ms |
| #!ASTPnnnn | Value ASTP | -0020 – 0050 mm |
| #!BANKnnnn | Change product bank | 0000 - 0009 |
| #!BLOWnnnn | Blow on time = APT 2 | 0001 - 7500 ms |
| #!COMPnnnn | Automatic label compensation | 0000 = Off<br>0001 = On |
| #!CONTnnnn | Material contrast | 0001 – 0200<br>0000 automatically |
| #!DISTnnnn | Distance label sensor – dispensing edge | 0080 – 9999 * 0.1 mm |
| #!EGRAnnn | Gear ratio | 0300 – 1000 |
| #!LPITnnnn | Label length | 0005 – 0999 mm<br>0000 automatically |
| #!MACHnnnn | Machine type | 0000 ALS230<br>0001 ALX720<br>0002 ALS330<br>0003 ALS430 |

| Command | Description | Range |
|---------|-------------|-------|
| #!MDIRnnnn | Motor direction | 0000 Right --- ><br>0001 Left < --- |
| #!MLABnnnn | Missing label error | 0000 NONE<br>0001 Warning<br>0002 Error 1<br>0003 Error 2 |
| #!PDT nnnn | Print dwell time | 0001 – 1000 ms<br>0000 printer off |
| #!PHT nnnn | Printer hold time | 0001 – 7500 ms |
| #!POS_nnn | Labelling position | 0001 – 9999 * 0.1 mm |
| #!PRDLnnnn | Product length | 0005 – 4000 mm |
| #!P_S_nnnn | Polarity product sensor | 0000 LEDG<br>0001 TEDG |
| #!RAMPnnnn | Acceleration Ramp | 0000 NORM<br>0001 FAST |
| #!SLEWnnnn | Slew speed | 0000 = FAST<br>0001 = SLOW |
| #!STADnnnn | Start delay | 0001 - 9999 ms |
| #!STODnnnn | Stop position | 0080 - 9999 * 0.1 mm |
| #!VELOnnnn | Speed | 0020 - 0300 * 0.1m/min |
| #!SAVEnnnn | Store in data bank | 0001 - 0009 |
| #!LOADnnnn | Load data bank | 0001 - 0009 |

The following described commands do not have parameter values. With these commands the host can monitor and control the machine.

#!CLRC      Set label counter to 0

#!CLRE      Clear error message

#!CLRW      Clear warning

#!ERRF      The machine sends an error status to the monitoring computer. The message
ERR8___4__1_<04H> means, error 8, 4 and 1 have occurred.

#!WARF      The machine sends a warning status to the monitoring computer. The message
WARF7_____0 means: The warnings 7 and 0 have occurred.

#!LABC      The machine sends the number of dispensed labels e.g. LABC0000008359 back

#!SP__      The machine is set to off. The product sensor is disabled and labelling will
therefore be stopped.

#!SR__          The machine is set to on. The product sensor is enabled and labelling can restart.

For a full automatic operation, the following procedure in case of an error is required:

- #!ERRF          Request error
- #!CLRE          Clear error message after fixing the error. The labeller shows „INIT"
- #!SR__          Clear INIT message

## Bit definition in error flag

| Error number | Error message in display | Error description |
|---|---|---|
| 0 | E__0 | Pressure roller open |
| 1 | E__1 | End of material (4 missing labels) |
| 2 | E__2 | EP-applicator error |
| 3 | E__3 | checksum error configuration data |
| 4 | E__4 | checksum error parameter bank |
| 5 | E__5 | Error 10V low |
| 6 | E__6 | Error 24V low |
| 7 | E__7 | missing label on product |
| 8 | E__8 | Error motor driver |

## Bit definition in warning flag

| Warning | Message in display | Warning description |
|---|---|---|
| 0 | W__0 | Next product start before finished |
| 1 | W__1 | Product start but no material not initialised |
| 2 | W__2 | EEPROM error during write |
| 3 | W__3 | Interface warning |
| 4 | W__4 | APSF speed too fast |
| 5 | W__5 | End of material  (OD-Control) |
| 6 | W__6 | too many products |
| 7 | W__7 | Loop not ready (720) |

# 8. Connections and signals

This machine has a number of inputs to connect sensor's and a control. Outputs are available for applicators, a printer and other purposes.

## 8.1 Output signals

This machine has eight outputs, which switch the output from open circuit to + 24V. The maximum current must not exceed 500 mA. The four signals for error messages, machine ready, low material and warnings are available for other machines in the process or additional alarm signals. For connecting an applicator three signals are available and one additional for the printer.
The output signals are available at terminal connector CN33 on the main board. The wiring of the terminal is shown otherwise.

### 8.1.1 Error and warning output

The outputs for errors and warnings are available on the terminal CN33 and optional on the I/O plug. The signals are switched active (+24V) if an error or warning occurs. When the error or warning is erased, the signal becomes passive again.

### 8.1.2 Printer output

This machine can be connected to a printer. To use the printer the PDT parameter should be adjusted.
A new label cannot be dispensed until the printer dwell time set in PDT is over.

### 8.1.3 OD-Control output

This output is switched active (+24V) if the OD-Control input is switched active during dispensing.

### 8.1.4 Ready output

This output shows when the machine is ready for labelling. This output is switched inactive if there is:
• an error message appears in the display
• the mains supply voltage has fallen below specification
• the machine requires initialisation
• in OFF condition.

## 8.2 Applicator modes

The machine is able to dispense the label direct on the passing product. There is also the possibility to drive without any external control a wide range of applicators.

### 8.2.1 Signals for direct dispense

For direct dispensing the airstream signal can be used to control a pneumatic driven dispensing edge. The start of the airstream signal (= motor run signal) could be behind the start of the dispense motor, adjusted with the function APT3. The signal is switched inactive, when the label dispense has been completed. Also the stop could be adjusted with the function ASTP to switch inactive before or behind the dispense motor stop.
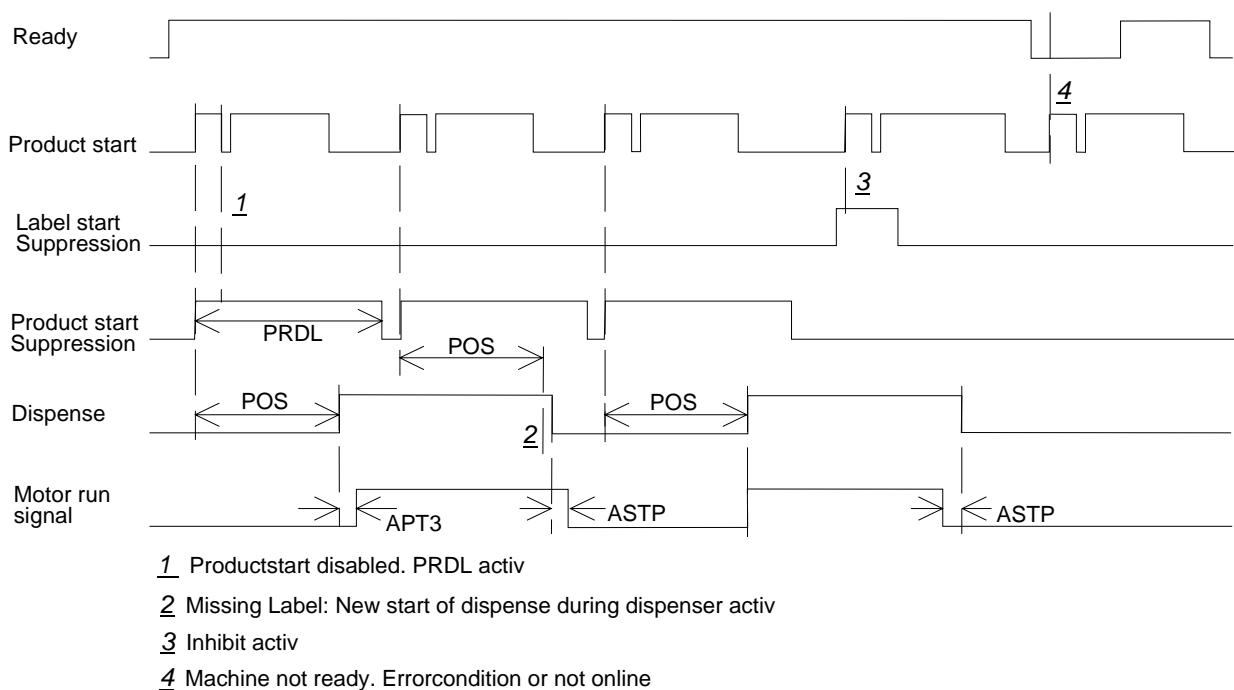


1 Productstart disabled. PRDL activ

2 Missing Label: New start of dispense during dispenser activ

3 Inhibit activ

4 Machine not ready. Errorcondition or not online

*Figure 10 Timing diagram direct dispense*

### 8.2.2  Control signals for the ASA applicator

For controlling an air stream applicator the signals air- stream and blow on are necessary. The time period APT2 defines how long the blow on signal is active. After labelling the product and the time period of APT3 a new label will be dispensed on to the applicator. After that the machine is ready for a new labelling.
All errors are given after 5 seconds!
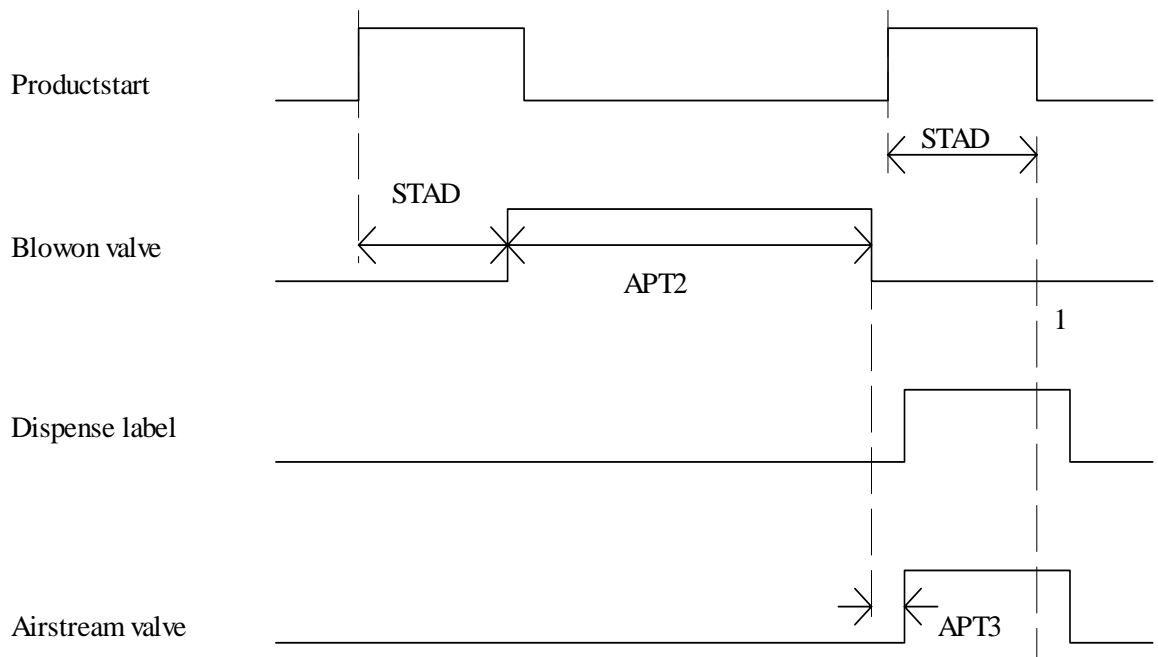


1    Missing Label: Labeller not ready for dispense

*Figure 11 Timing ASA applicator*

## 8.2.3 Signals for the EP applicator

For controlling the applicator the signals air stream, cylinder valve and blow on are necessary.
After a product signal has occurred the labelling cylinder valve is switched active after the delay
STAD. However if at this time the applicator is not in the home position then error message
E__2 is generated. After the delay time APT1 the blow on valve is switched active for the time
APT2.
When APT2 is completed both the labelling cylinder valve and the blow on valve signals are
switched inactive. If the control does not read the home position in the time given - 3* (APT1+
APT2) - than the error message E__2 is generated.



1   Missing Label: Labeller not ready for dispense

2   Error: Homeposition not detected

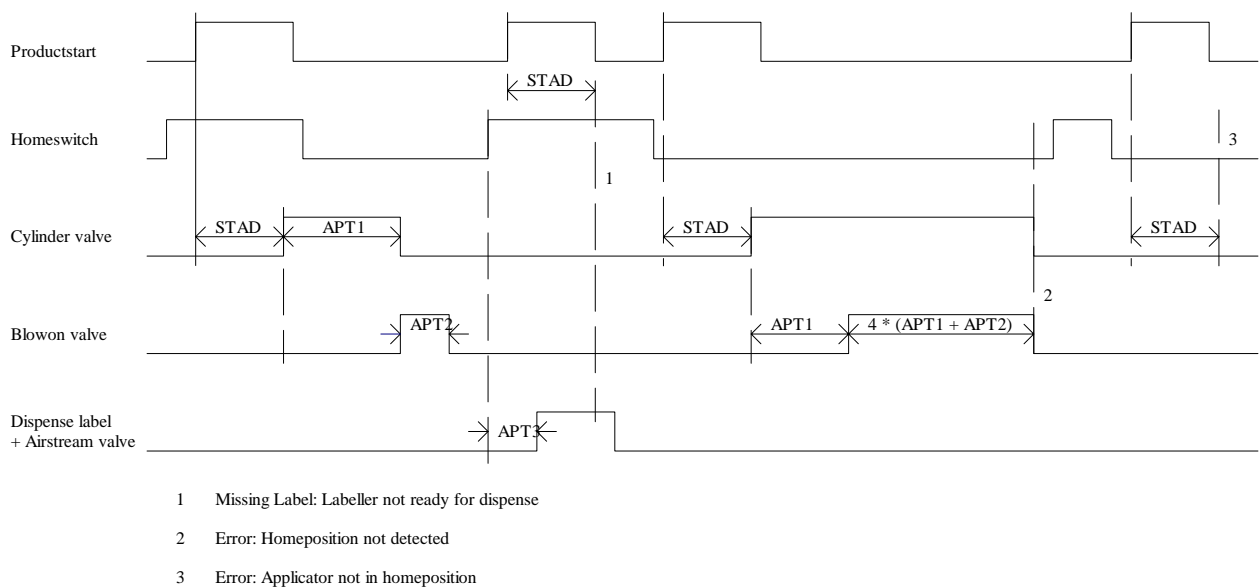3   Error: Applicator not in homeposition

*Figure 12 Timing EP applicator*

### 8.2.4    Applicator connector

The applicator connection is done via a 15 pole D-sub connector common to other machines.
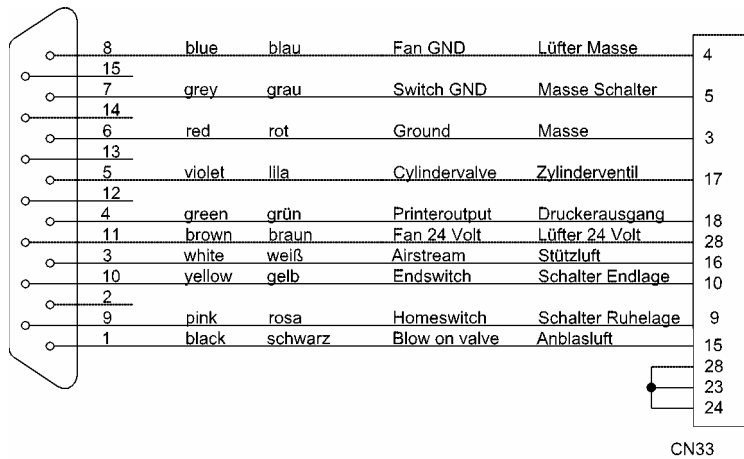
| | | | | | |
|---|---|---|---|---|---|
| 8 | blue | blau | Fan GND | Lüfter Masse | 4 |
| 15 | | | | | |
| 7 | grey | grau | Switch GND | Masse Schalter | 5 |
| 14 | | | | | |
| 6 | red | rot | Ground | Masse | 3 |
| 13 | | | | | |
| 5 | violet | lila | Cylindervalve | Zylinderventil | 17 |
| 12 | | | | | |
| 4 | green | grün | Printeroutput | Druckerausgang | 18 |
| 11 | brown | braun | Fan 24 Volt | Lüfter 24 Volt | 28 |
| 3 | white | weiß | Airstream | Stützluft | 16 |
| 10 | yellow | gelb | Endswitch | Schalter Endlage | 10 |
| 2 | | | | | |
| 9 | pink | rosa | Homeswitch | Schalter Ruhelage | 9 |
| 1 | black | schwarz | Blow on valve | Anblasluft | 15 |
| | | | | | 28 |
| | | | | | 23 |
| | | | | | 24 |

CN33

*Figure 13 Applicator connector*

# 8.3  Input signals

This machine (dispenser) is provided with photo coupled inputs for:

- the product sensor signal
- an inhibit signal for inhibiting labelling
- a signal from an OD control which shows the end of the material roll.
- a signal from an automatic product speed follower
- the EP applicator signals from the HOME and END switches
- an unused input for future extensions or customer specific software (used for loop control in the 720)

The inputs are galvanically separated through photo couplers to connect to PNP or NPN outputs. The wiring and the connection of the signal plug is shown otherwise. The input voltage across the inputs must be in the range of 15 V to 30 V to switch active.
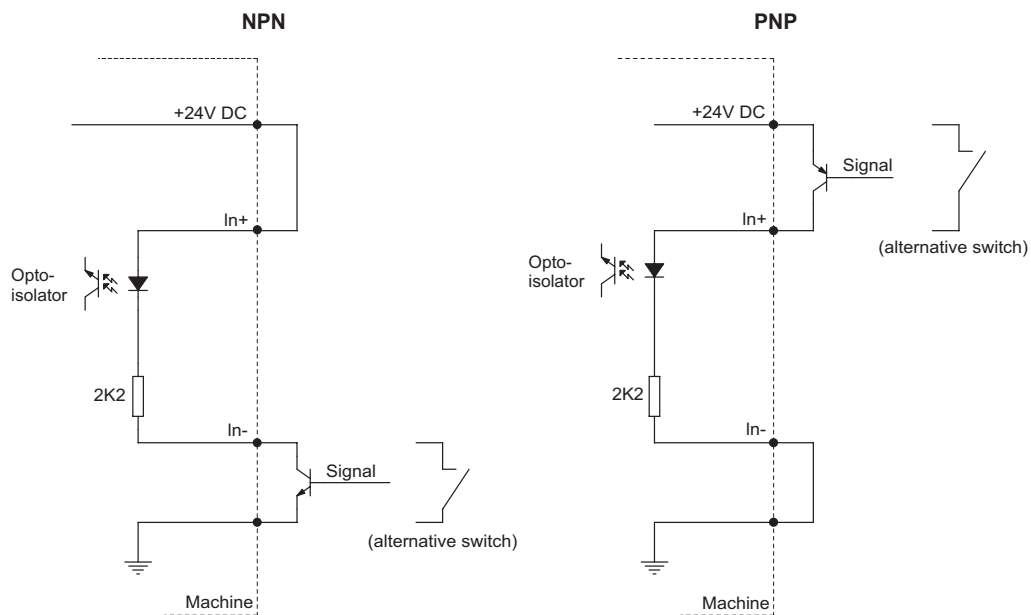


*Figure 14:*      *Connecting NPN (left) or PNP (right) inputs.*

### 8.3.1    Product sensor

The product sensor starts the labelling. The source of the signal could be a optical sensor, a switch or a signal from a PLC. The time between start signal and start of dispensing (adjusted with POS) should be as small as possible. This means that an optical sensor should be placed 10 to 20 mm before the dispensing edge. The minimum distance is necessary for the internal speed compensation.

The machine is supplied as standard with one socket for connecting the product sensor. You may either use a NPN or PNP type sensor output.
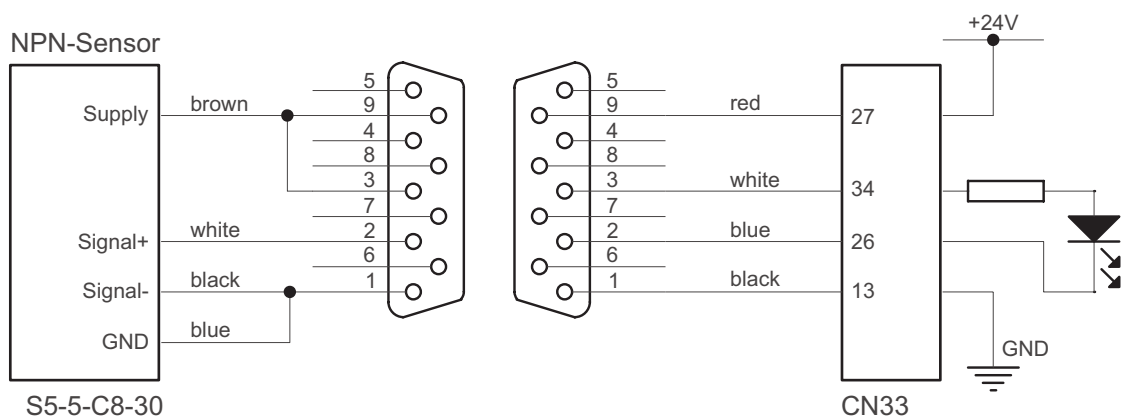


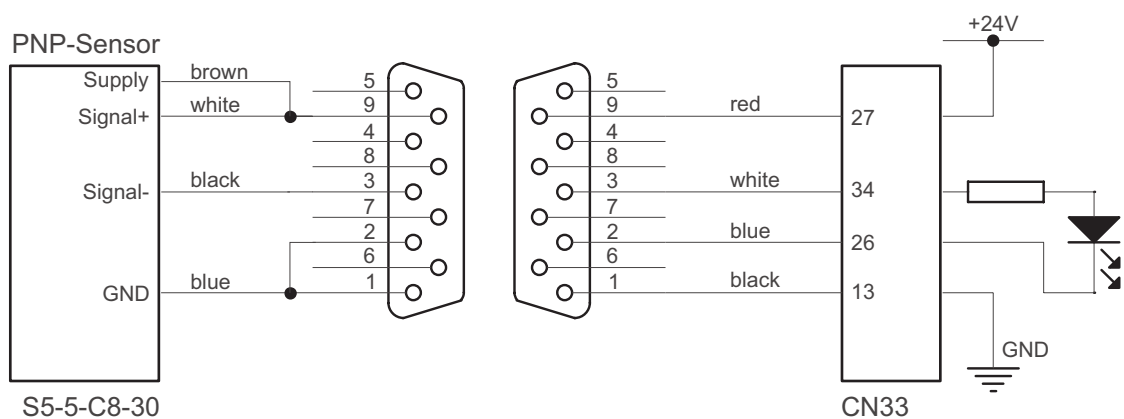*Figure 15 Example for connecting an NPN sensor (Datalogic)*



*Figure 16 Example for connecting an PNP sensor (Datalogic)*

## 8.3.2 OD Control sensor

Optional an OD control could be mounted to control the label roll. If the label material is nearly empty the sensor gives an signal. A warning message and an output signal inform the personal that in the next time the material has to be changed.
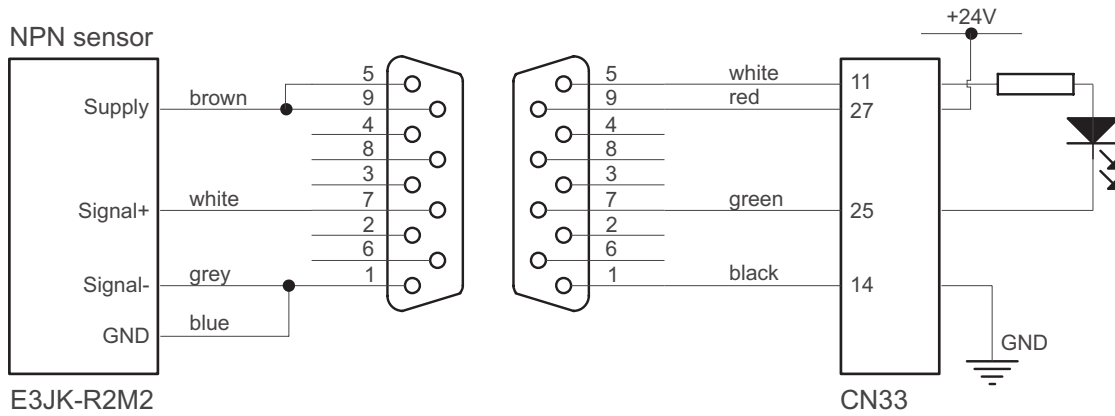


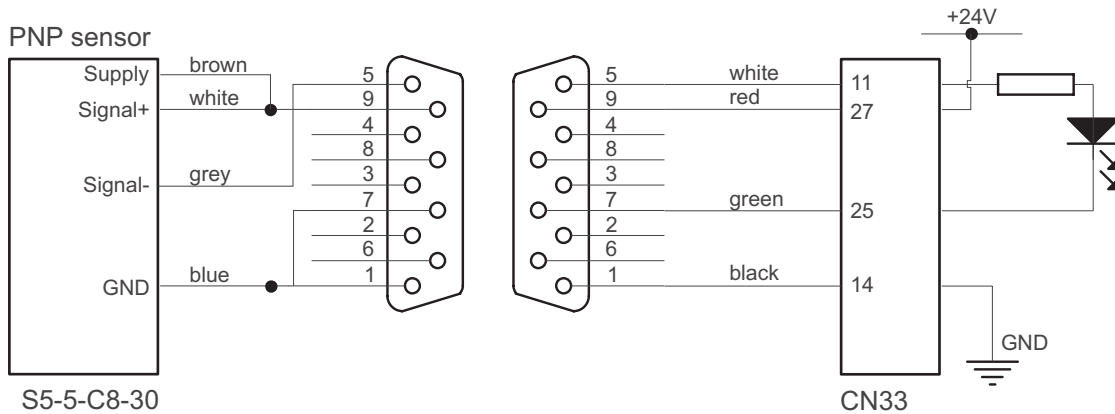*Figure 17 NPN connection of optional ODC sensor*



*Figure 18 PNP connection of optional ODC sensor*

### 8.3.3 APSF sensor

For the APSF function (Automatic speed follower) a rotary encoder has to be installed. For optimum labelling accuracy the rotary encoder should be selected so that it produces one pulse for every 0.125 mm of product movement. The connection of the encoder should be done with a shielded cable. For correct operation the rise and fall time of the encoder signal should be 1 µs.
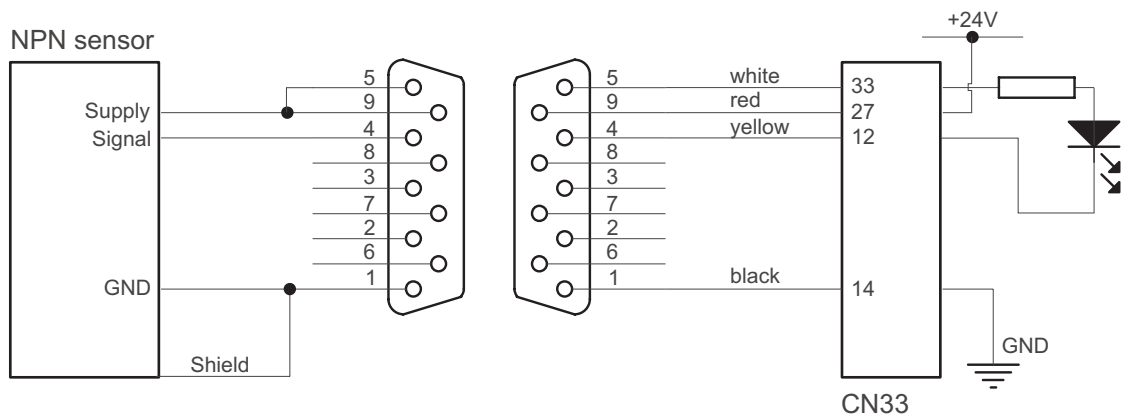


*Figure 19 Connection of a NPN type APSF sensor*
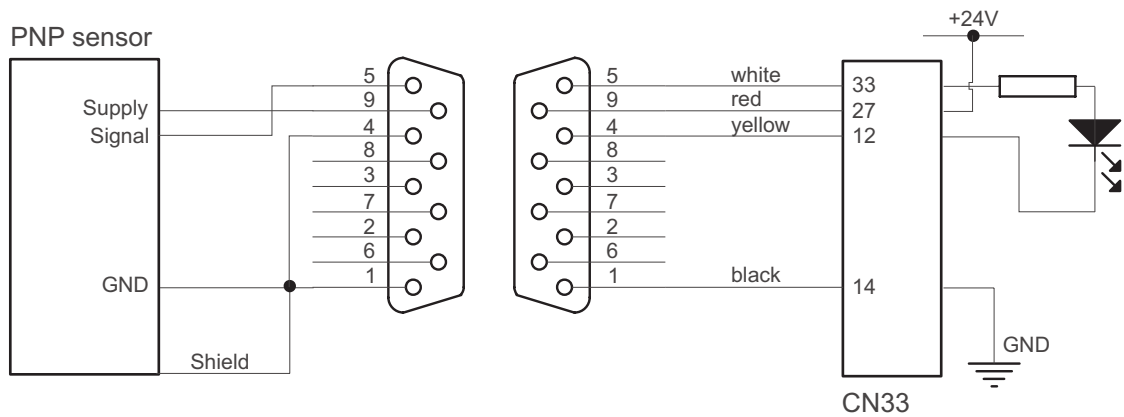


*Figure 20 Connection of a PNP type APSF sensor*

## 8.3.4    Control signals

An optional connector could be installed for integration of the machine in the line control.

| Inhibit + | Startunterdrückung + | 5 | | | 5 | white | weiß | 21 |
| +24 Volt | +24 Volt | 9 | | | 9 | red | rot | 27 |
| Inhibit - | Startunterdrückung - | 4 | | | 4 | blue | blau | 7 |
| Error output | Fehlerausgang | 8 | | | 8 | yellow | gelb | 20 |
| | | 3 | | | 3 | orange | orange | TBD |
| Warning output | Warnausgang | 7 | | | 7 | green | grün | 19 |
| | | 2 | | | 2 | violet | lila | TBD |
| Ready output | Betriebsbereitschaft | 6 | | | 6 | brown | braun | 31 |
| Ground | Masse | 1 | | | 1 | black | schwarz | 14 |

CN33
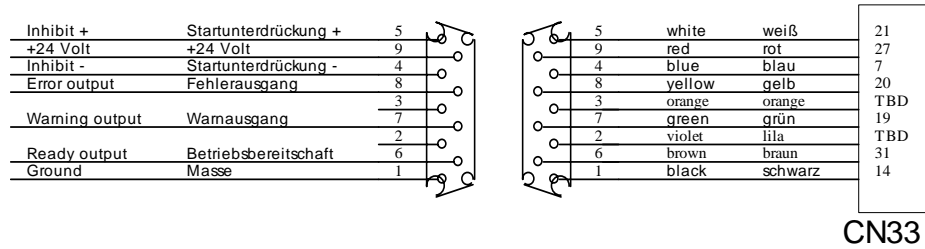
*Figure 21 Optional connector for process contro*

/

Mainboard ALS 330 / 230    No. 8770.12

Eingänge max. 24V

24V DC für externen Gebrauch
24V DC for external use
450mA max

Produkt Lichtschranke / Product sensor

Impulsgeber APSF / Impulsgenerator APSF

Materialende / Material-end

Applikator Zyl. Schalter Endlage
Applicator Zyl. End-switch

Applikator Zyl. Schalter Ruhelage
Applicator Zyl. Home-switch

Nicht in Gebrauch
Not in use

Etikettenstart Unterdrückung
Labelstart-inhibit

Rollenende Warnung
OD-Conrtol Output

Betriebsbereitschaft
Ready Output

Fehlerausgang
Error output

Warnausgang
Warning output

Druckerausgang
Printer output

Applikator-Zylinder Ventil
Applikator-Zylinder valve

Unterstützungs Luft Ventil
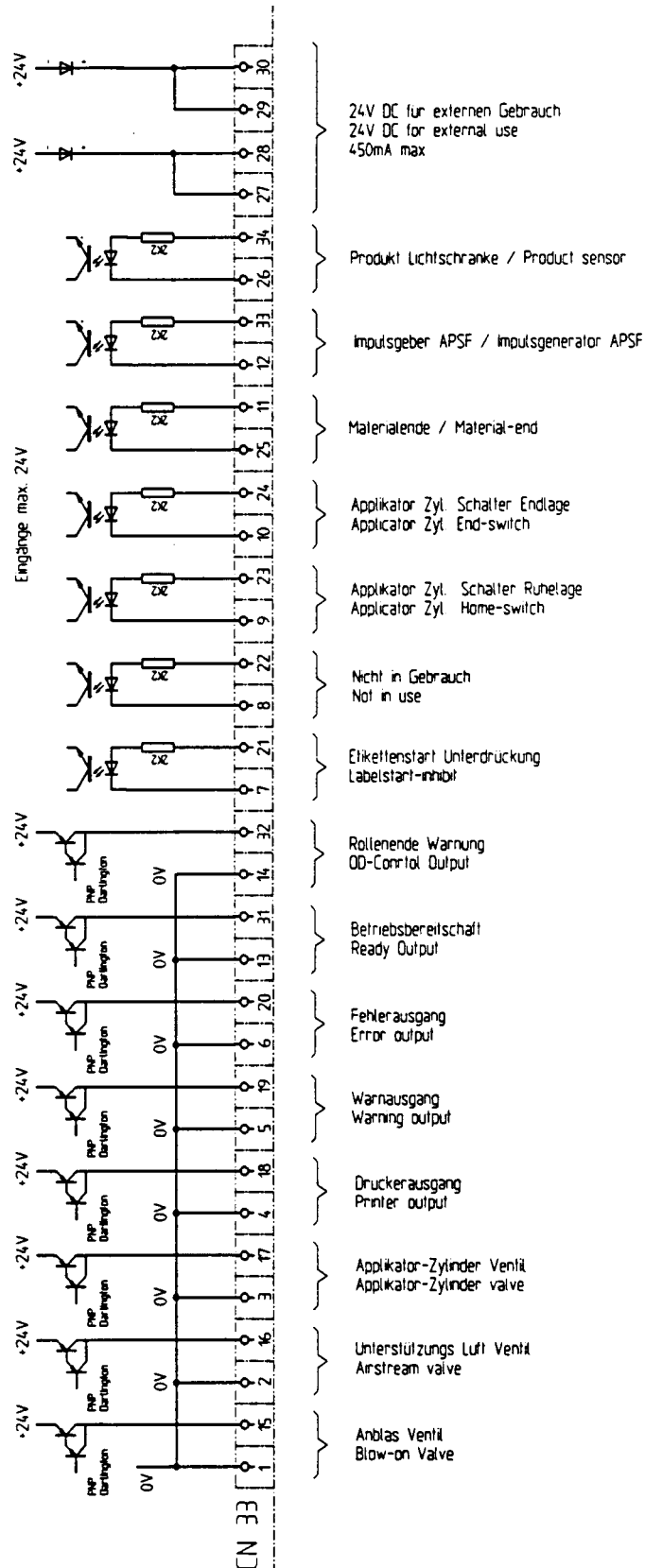Airstream valve

Anblas Ventil
Blow-on Valve

CN 33

*Figure 22 Internal I/O connector*

## 8.4   EMI

To protect the machines against electrical noise and to protect production of electrical noise you have to follow this rules:

**Rule 1**
All metallic parts must have a good and plane contact (no lacquer, aluminium oxide is an isolator). Use scratch washers.

**Rule 2**
Signal lines (Data- , communication- and control cable) has to separated to power cables. The minimum distance is 50 cm (20 cm inside a cabinet).

**Rule 3**
All signal lines should be lead in the machine or cabinet only on one side.

**Rule 4**
Unshielded cables must be twisted (both poles).

**Rule 5**
On all inductive components (relays, valves) must be directly connected a clamp circuit (diode, MOV).

**Rule 6**
All signal lines must be shielded. The shield must have a good earth connection on both sides. For the connection use metallic clamps. Don't use a soldered wire for this connection.

In case of different earth potential on both cable sides install parallel a cable of  at minimum 10 mm2.

**Rule 7**
The shield of analogue cable (Video etc) should be shielded only on one side. Normally there is no such cable with labelling machines.

**Rule 8**
Line filter has to be mounted directly on the cable entry.

**Rule 9**
Cables should not fly in the air. Lead all cables nearby metallic, grounded parts. Ground unused cables and wires in a cable at minimum on one side, better on both.

**Rule 10**
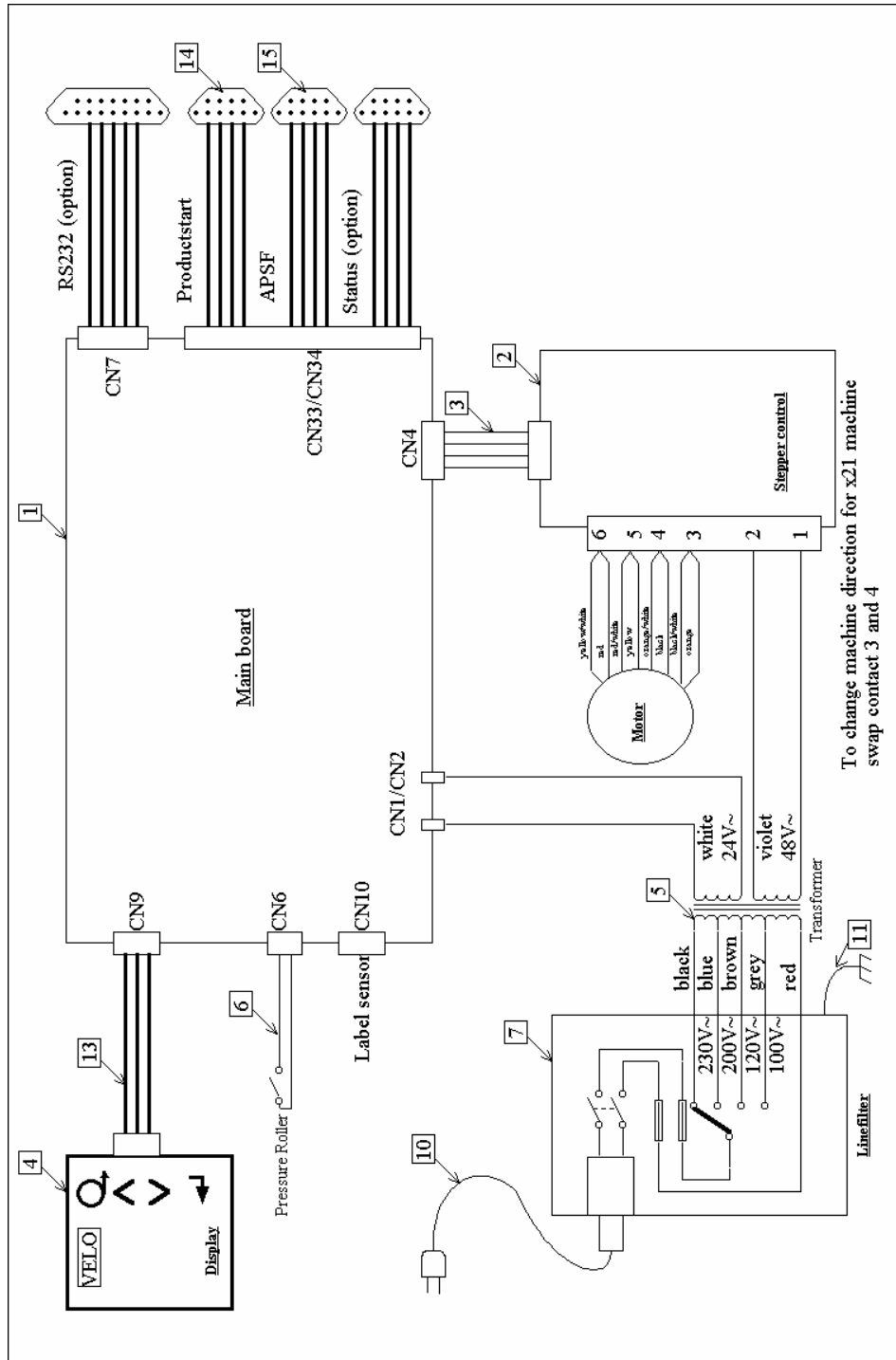Cables should not be longer as necessary.
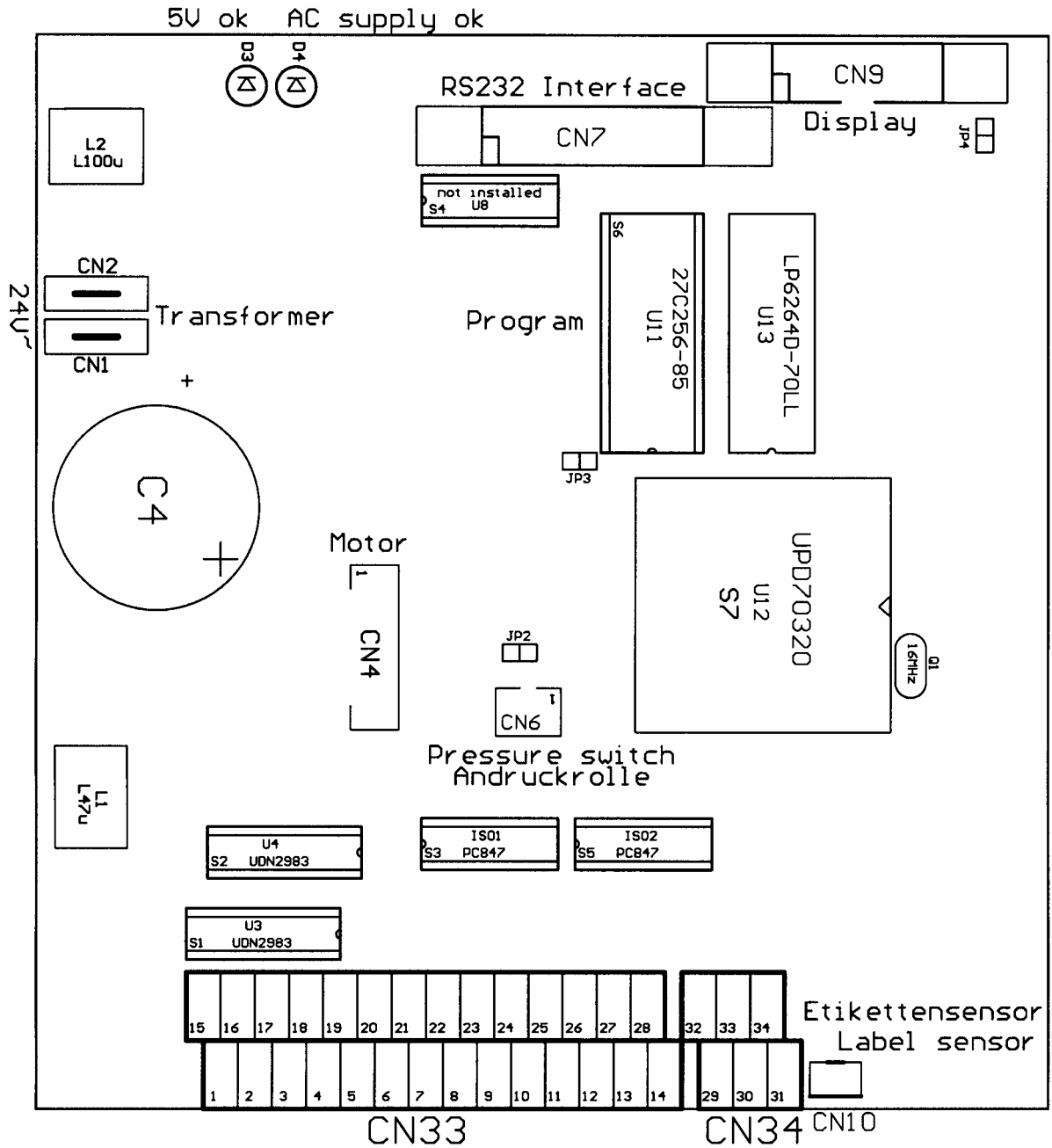
## 8.5 Electronic diagrams



*Figure 23 Wiring diagram*

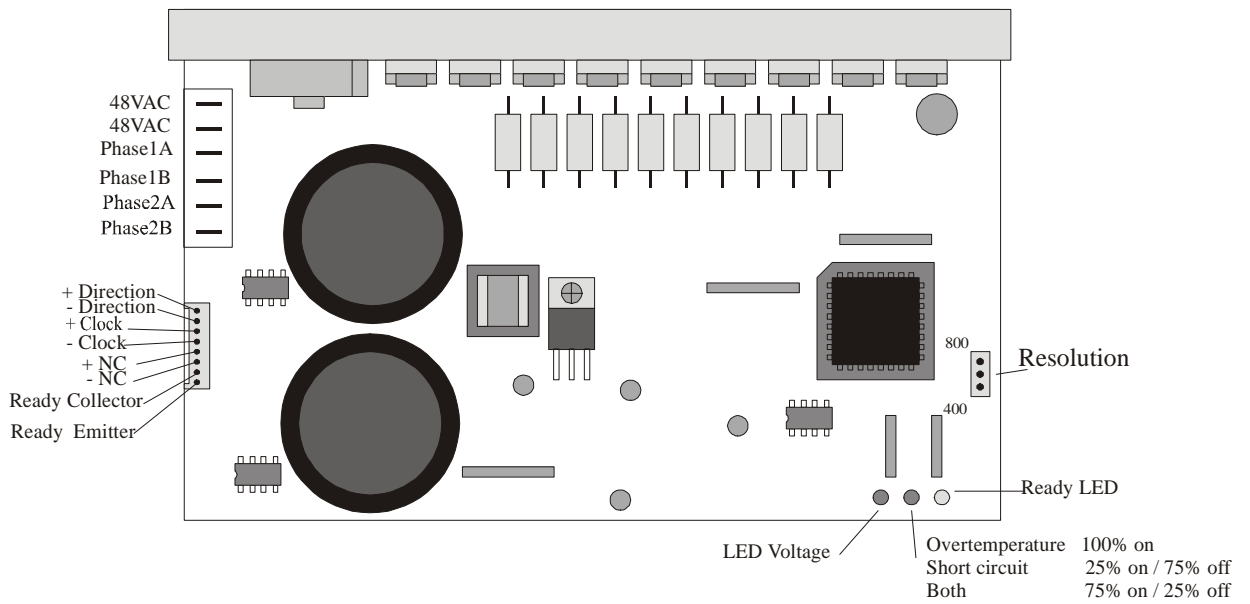*Figure 24 Layout dispenser electronic board*

*Figure 25 Layout stepper motor driver*

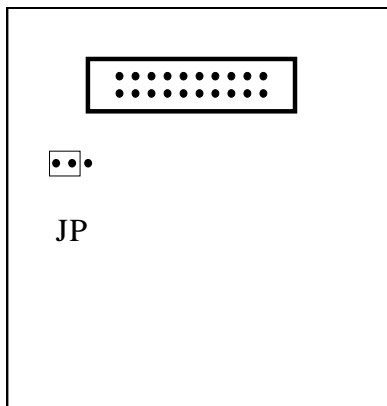The jumper position has to be 800 steps.



*Figure 26 Display jumper setting*

# 9.  Errors and warnings

The software checks during the labelling permanently, if the machine runs under normal operation. If labelling is not possible, the display shows a message e.g. E__0.
If the labelling can be continued, but a problem has occurred or may occur, the display shows a warning e.g. W__1.
By pressing the key ENTER the message will be erased.
In case of an error or warning message, the relevant output is switched. The signal can be used for interconnection with an external machine control.
Via the serial interface, the errors and warnings number can be called.
If an error cannot be erased, please call your local service technician.

## 9.1  Dispenser error messages

In case of an error message the relevant output is switched. The signal can be used for interconnection with an external machine control.

**STO! Power-fail message**
The message STO! appears in the display as the machine is switched off or if the mains supply voltage has fallen below specification.
The message STO! (store) indicates that the machine has stored some parameters internally as a power fail condition was detected. The error output is switched active and the ready output inactive simultaneously with STO! appearing in the display.
If the mains supply voltage only experiences a drop in level and then returns to a correct level then the ready output is restored to its previous condition but the message STO! will remain in the display to indicate that there has been a problem with the mains supply.

| Message | Meaning | How to solve |
|---------|---------|--------------|
| E__0 | Pressure roller is open | Close the pressure roll and make a new initialisation if necessary |
| E__1 | During material transport no label is recognised over a length of 4 labels | Insert new material and check the label sensor |
| E__2 | EP applicator not in HOME position | Check air supply. Applicator not connected. HOME switch not adjusted |
| E__3 | Check sum of the configuration data is wrong. All Parameters are set | Call the configuration menu and adjust all parameters again. |

| Message | Meaning | How to solve |
|---------|---------|--------------|
| | to the factory adjustment. | |
| E__4 | Check sum of the labelling data is wrong. Labelling Parameters are set to the factory adjustment. | All labelling parameter have to be adjusted again |
| E__5 | 10V supply voltage for label sensor low. | Short circuit in label sensor or cable. Voltage regulator U14 is damaged. |
| E__6 | 24V Voltage low | Short circuit on an output. Total load too high i.e. max is 3A for all outputs. Voltage regulator U1 is damaged. Change main board. |
| E__7 | Material initialization failed | Check if the label web is threaded through the label sensor |
| E__8 | Error stepper motor driver | The stepper motor control has detected an error. The fault is indicated by the LED's on the driver. |
| E__9 | 10V supply for label sensor too high | Voltage regulator U14 damaged |
| E__10 | Missing label on product | One or several product could not be labelled. Distance between products too close. Increase speed of printer. |
| ___0 | Process error (Divide overflow) | Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board |
| ___1 | Illegal interrupt (processing error) | Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board |
| ___2 | Illegal bank interrupt (processing error) | Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board |
| INTO | Illegal interrupt INTP0 (processing error) | Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board. |

## 9.2 Dispenser warnings

In case of a warning message the relevant output is switched. The signal can be used for interconnection with an external machine control. Warning W__5 activates only the special OD warn output.

| Message | Meaning | How to solve |
|---|---|---|
| W__0 | New start signal from product sensor while ALX720 is dispensing a label<br>Multiple signals from the same product<br>Several missing labels on the web, which can not be compensated | Slow down conveyor speed or product sequence.<br>Adjust higher labelling speed<br>Increase the parameter value of PRDL product length |
| W__2 | Error while writing in the EEPROM | EEPROM defect, Start machine again, if problem remains the same, exchange EEPROM as soon as possible |
| W__3 | RS232 transfer error | Check interface parameter in the configuration menu and in the host |
| W__4 | Conveyor speed exceeded the max. speed of the dispenser | Slow down conveyor. If average conveyor speed is OK then check for oscillation in the conveyor speed or vibration of the pulse generator |
| W__5 | Material end by the OD control recognised | Insert a new material roll |
| W__6 | Too many products between sensor and dispensing edge | Move the sensor closer to the dispensing edge |

# 10. Technical Specification

The following data are maximum values. Depending on label material, operation environment and labelling condition the real value could be lower.

## 10.1 Technical Information

| Description | Details |
|---|---|
| Label width: incl. Backing paper | 10 mm ... 100 mm |
| Label length | 5 to 999 mm |
| Diameter label roll | max. 300 mm |
| Core diameter (of label roll) | 37mm (1.5") or optional 74mm (3") |
| Dispensing speed | 0.2- 30 m/min |
| Material transport | 0.125 mm per motor step |
| APSF   Automatic Product Speed Follower | optional   Resolution: 0.1mm to 0.3mm per pulse, recommended 0.15mm |
| Stop accuracy | +- 0.5mm |
| Labels per minute rate | see performance charts |
| Rewind | 4 pin mandrel |
| Dispensing edge | V- shape fixed, optional L-dispensing edge |
| Version available | Left or right hand |
| Dimensions (w * h * d) | 550 * 600 * 300 mm   incl. Dispensing edge |
| Weight | 23 kg |
| Display panel | 4 Digit LED display, 4 Membrane keys |
| Label sensor | Infrared sensor, automatic adjustment possible |
| CE- marked | Confirms all relevant actual European standards |
| Protection class | IP 41, IP54 on request |
| Operating environment | 5 – 40°C, storage 0 – 70°C 30 - 80%, non condensing |

| Description | Details |
|---|---|
| Power consumption | 300 VA |
| Mains voltage | 100V~, 115V~, 200V~ and 230V~ 50/60Hz (6.3A for 110V else 3.15A), +5%- 10% |

## 10.2 Application specification

The labeller is designed and built for automatic applies of self-adhesive labels.

## 10.3 APSF- Sensor Specification (Optional function)

The resolution of the sensor should be selectedsuch per 1mm product movement 1 to 5 pulses are generated.

It is possible to use one common sensor for several dispensers. In this case the sensor is supplied from one machine or the several supply voltages switched parallel are separated with diodes.

Supply voltage:            24 V DC
Output current:            20mA for each dispenser
Signal rise and fall time:  each 1µs
Max frequency:             20 kHz
Signal ratio:              1:1 +- 12,5 %
Connection:                Only shielded cable. The shield has to be grounded on both sides.

## 10.4 Performance

The following tables show the maximal theoretically labels per minute rate. Tolerances in product speed, label and product dimensions reduce the label rate. The tables are valid for direct dispensing (without applicator and printer).  For critical applications, performance test should be done first. The charts are valid for software version V5.x.

### 10.4.1  Labels per minute in relation to different label pitches



**Labels / minute at dispensing speed of 30 m/min**
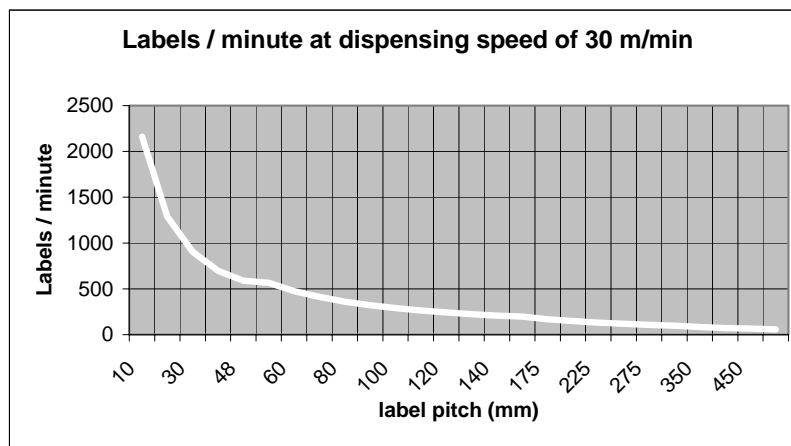
| Label Pitch (mm) | Dispensing Speed (m/min) | Labels per minute |
|---|---|---|
| 10 | 30 | 2160 |
| 20 | 30 | 1290 |
| 30 | 30 | 906 |
| 40 | 30 | 697 |
| 48 | 30 | 588 |
| 50 | 30 | 566 |
| 60 | 30 | 476 |
| 70 | 30 | 411 |
| 80 | 30 | 361 |
| 90 | 30 | 322 |
| 100 | 30 | 291 |
| 110 | 30 | 265 |
| 120 | 30 | 244 |

| Label Pitch (mm) | Dispensing Speed (m/min) | Labels per minute |
|---|---|---|
| 130 | 30 | 225 |
| 140 | 30 | 210 |
| 150 | 30 | 196 |
| 175 | 30 | 168 |
| 200 | 30 | 147 |
| 225 | 30 | 131 |
| 250 | 30 | 118 |
| 275 | 30 | 107 |
| 300 | 30 | 99 |
| 350 | 30 | 85 |
| 400 | 30 | 74 |
| 450 | 30 | 66 |
| 500 | 30 | 59 |

## 10.4.2  Dispensing speed reached while dispensing certain label length

**Dispensing speed reached in reference to label
length dispensed**
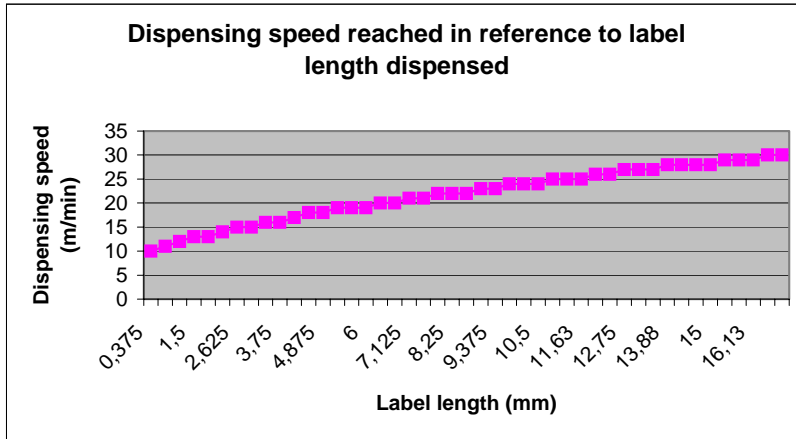
| Label length (mm) | Dispensing speed reached at certain label length (m/min) |
|---|---|
| 0,375 | 10 |
| 0,75 | 11 |
| 1,125 | 12 |
| 1,5 | 13 |
| 1,875 | 13 |
| 2,25 | 14 |
| 2,625 | 15 |
| 3 | 15 |
| 3,375 | 16 |
| 3,75 | 16 |
| 4,125 | 17 |
| 4,5 | 18 |
| 4,875 | 18 |
| 5,25 | 19 |
| 5,625 | 19 |
| 6 | 19 |
| 6,375 | 20 |
| 6,75 | 20 |
| 7,125 | 21 |
| 7,5 | 21 |
| 7,875 | 22 |
| 8,25 | 22 |
| 8,625 | 22 |

| Label length (mm) | Dispensing speed reached at certain label length (m/min) |
|---|---|
| 9 | 23 |
| 9,375 | 23 |
| 9,75 | 24 |
| 10,125 | 24 |
| 10,5 | 24 |
| 10,875 | 25 |
| 11,25 | 25 |
| 11,625 | 25 |
| 12 | 26 |
| 12,375 | 26 |
| 12,75 | 27 |
| 13,125 | 27 |
| 13,5 | 27 |
| 13,875 | 28 |
| 14,25 | 28 |
| 14,625 | 28 |
| 15 | 28 |
| 15,375 | 29 |
| 15,75 | 29 |
| 16,125 | 29 |
| 16,5 | 30 |
| 16,875 | 30 |

**Note:** As in most real labelling environments the products will have a spacing of at least 1cm the actual labelling rate can simply be calculated by dividing the product pitch into the conveyor speed. Product length = 100 mm; Product distance = 50 mm; Conveyor speed = 20 m/min

Label performance = 20*1000 / (100 + 50)= 133 / min

# 11. Adjustment

| Function | Factory | Application |
|----------|---------|-------------|
| P_S_ | LEDG | |
| MACH | 230 | |
| MDIR | ← | |
| RAMP | FAST | |
| MLAB | WARN | |
| COMP | ON | |
| APSF | OFF | |
| APPL | DIR | |
| BAUD | NONE | |
| PARI | NO | |
| SBIT | 2BIT | |
| DBIT | 8BIT | |
| DIST | 76.0 mm | |
| PHT | 1 | |
| SLEW | FAST | |

| Function | Factory | PD01 | PD02 | PD03 | PD04 |
|---|---|---|---|---|---|
| POS(STAD) | 100.0 mm | | | | |
| VELO | 30.0 m/min | | | | |
| STOD | 76.0 mm | | | | |
| BLOW(APT2) | 1 ms | | | | |
| LPIT | AUTO | | | | |
| CONT | AUTO | | | | |
| PRDL | AUTO | | | | |
| EGRA | 500 | | | | |
| APT1 | 200 ms | | | | |
| APT3 | 0 ms | | | | |
| APOS | 0 | | | | |
| ASTP | 0 | | | | |
| PDT | OFF | | | | |

| Function | PD05 | PD06 | PD07 | PD08 | PD09 |
|---|---|---|---|---|---|
| POS(STAD) | | | | | |
| VELO | | | | | |
| STOD | | | | | |
| BLOW(APT2) | | | | | |
| LPIT | | | | | |
| CONT | | | | | |
| PRDL | | | | | |
| EGRA | | | | | |
| APT1 | | | | | |
| APT3 | | | | | |
| APOS | | | | | |
| ASTP | | | | | |
| PDT | | | | | |

# 12. Index